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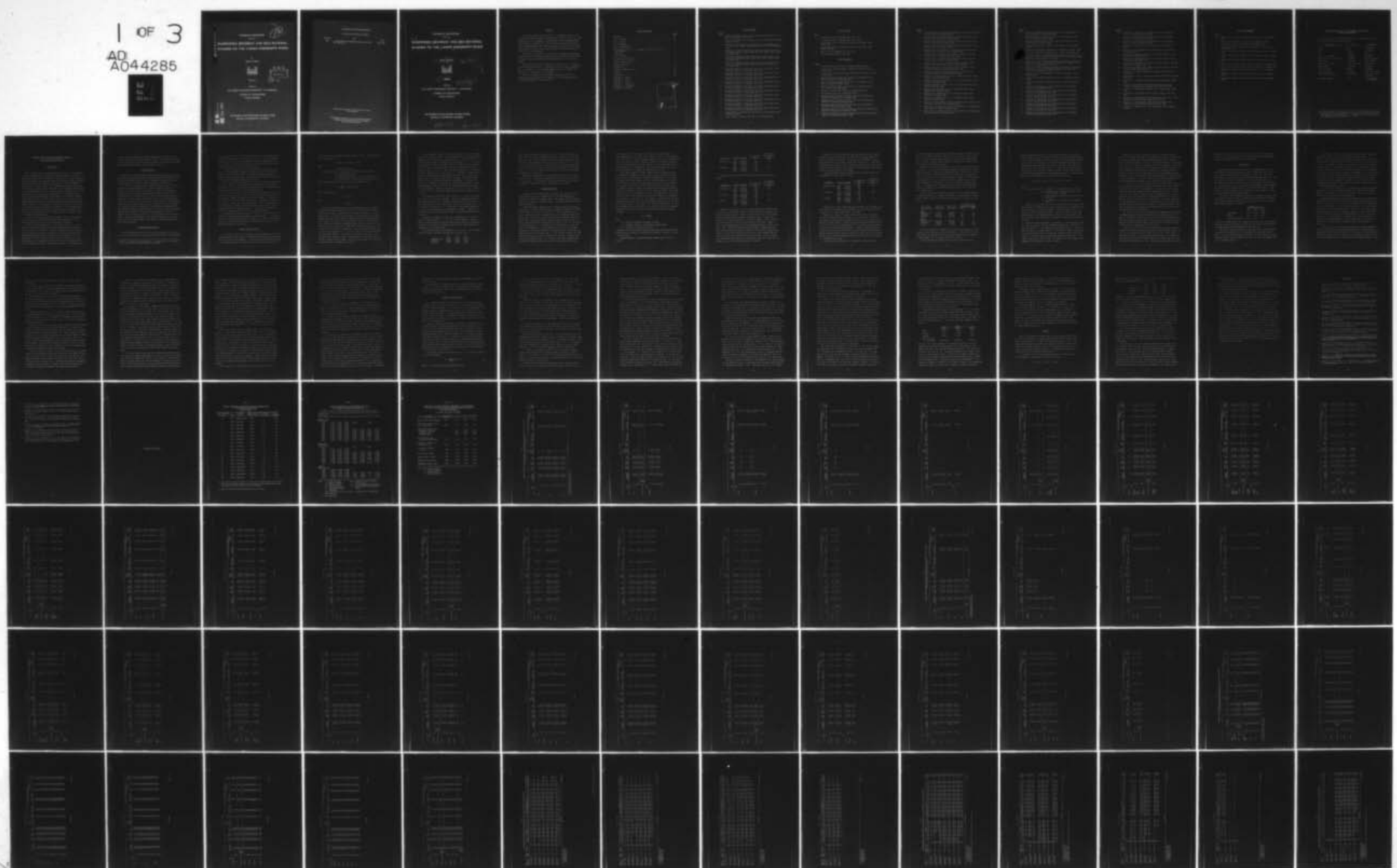

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POTAMOLOGY INVESTIGATIONS

Report 300-1

SUSPENDED SEDIMENT AND BED MATERIAL STUDIES ON THE LOWER MISSISSIPPI RIVER

by

Lamont G. Robbins

August 1977

Prepared by

U.S. ARMY ENGINEER DISTRICT, VICKSBURG

CORPS OF ENGINEERS

Vicksburg, Mississippi

POTAMOLOGY INVESTIGATIONS REPORTS

Issued Prior to and Including This Report

Report No.	Title	Date
300-1	Suspended Sediment and Bed Material Studies on the Lower Mississippi River	August 1977

9 POTAMOLOGY INVESTIGATIONS

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6

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Preface

The study reported herein is a part of continuing studies in connection with potamology investigations being conducted by the U. S. Army Engineer District, Vicksburg, on the portion of the Lower Mississippi River within its jurisdiction. These studies are conducted to gain a better understanding of the fluvial processes of the river and to apply this knowledge toward effective and economical stabilization works for flood control and navigation.

This report is the first in a new series of potamology investigation reports to be published by the Corps of Engineers. Previous potamology investigation reports published under the old series are not listed.

This study was performed under the direction of Mr. J. E. Henley, Chief, Engineering Division. The analysis and report were prepared by Mr. L. G. Robbins of the Potamology Section with the assistance of Messrs. J. L. Stewart and D. R. Williams.

COL G. E. Galloway, CE, was District Engineer, and LTC C. W. Steelman, CE, was Deputy District Engineer of the Vicksburg District during the preparation of this report.

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Conversion Factors, U. S. Customary to Metric (SI) Units of Measurement

U. S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

Multiply	By	To Obtain
inches	25.4	millimetres
inches	2.54	centimetres
feet	0.3048	metres
miles (U. S. statute)	1.609344	kilometres
square miles (U. S. statute)	2.589988	square kilometres
cubic yards	0.7645549	cubic metres
ounces (U. S. fluid)	2.957353×10^{-5}	cubic metres
pounds (mass)	0.4535924	kilograms
tons (2000 lbm)	907.1847	kilograms
feet per second	0.3048	metres per second
cubic feet per second	0.02831685	cubic metres per second
Fahrenheit degrees	5/9	Celsius degrees or Kelvins*

* To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use the following formula: $C = (5/9)(F - 32)$. To obtain Kelvin (K) readings, use $K = (5/9)(F - 32) + 273.15$.

SUSPENDED SEDIMENT AND BED MATERIAL STUDIES ON THE LOWER MISSISSIPPI RIVER

Introduction

The ultimate purpose of sediment studies in the U. S. Army Engineer District, Vicksburg, is to develop a workable knowledge of the basic principles controlling the transport of sediment in the Lower Mississippi River and to apply this knowledge toward effective and economical stabilization works for flood control and navigation. The more immediate purpose of this report, however, is to present the data that have been collected and analyzed to date (1929-1974) and to show what trends exist in the quantities and sizes of suspended and bed sediments for the Vicksburg District. For this report, measurements of all available bed-material samples are presented, but presentation of suspended sediment measurements has been limited to data collected at the three main discharge ranges since data at these ranges have been collected at regular, frequent intervals. Some analysis of the data is made, but no theoretical aspects of sediment transport are presented. The information presented in the tables and graphs of this report may be considered as a step toward the realization of the ultimate purpose of sediment studies in the Lower Mississippi River.

Previous reports that include information on the fluvial sediment for the portion of the Mississippi River under jurisdiction of the Vicksburg District may be found in References 1 through 9.

Because the Mississippi River is an alluvial river, it is a very dynamic system which adjusts its widths, depths, slopes, and meander sizes according to the sequence of water discharges imposed on the system, the sequence of sediment discharges acquired from erosional and degradational processes, and the proneness of the banks to erosion or deposition. Any major changes, either natural or artificial, in the shape, pattern, or alignment of the channel involve the transportation and redistribution of large quantities of sediment. Consequently, most

of the problems encountered in channel maintenance are caused by the movement of sediment into and within the system. Therefore, a knowledge of the magnitude and trends of sediment movement is necessary for designing an efficient navigation and flood control channel.

Data Collection

From 1929 to 1931, suspended sediment samples were collected intermittently on the Mississippi River at Arkansas City and Vicksburg, Then during the low water season of 1932, bed-material samples were taken from the thalweg at several locations throughout the District.

In 1966, the Vicksburg District began a potamology data collection program on the Mississippi River.[10] This program was initiated to provide a data base for studies leading to a better understanding of the basic principles controlling water and sediment transport. The 300 miles* of the Vicksburg District portion of the river has been divided into 25 study reaches as shown in Plates 1 and 2, and data have been collected in each study reach as need and capability have permitted. These data include hydrographic surveys, bed-form profiles, discharges and horizontal velocity distribution, bed-material and suspended sediment samples, and water-surface profiles. In addition, routine sediment sampling was established at the three discharge ranges located at Arkansas City, Vicksburg, and Natchez in 1967, 1968, and 1972, respectively. From 1967 through April 1972, sediment samples were collected monthly at the discharge ranges; since May 1972, sediment samples have been collected weekly.

Discharge Characteristics

The Mississippi River serves as the major drainage outlet for runoff from over 41 percent of the continental United States. The drainage

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* A table of factors for converting U. S. customary units of measurement to metric (SI) units is presented on page x.

basin covers more than 1,245,000 square miles, has a contributing area of 1,129,970 square miles, includes all or parts of 31 states and two Canadian provinces, and roughly resembles a funnel emptying into the Gulf of Mexico. Waters from as far east as New York and as far west as Montana contribute to flows in the lower river.

The main tributaries to the lower river above Vicksburg are the Ohio, St. Francis, White, Arkansas, and Yazoo Rivers. The Ohio River normally contributes more water to the Lower Mississippi during the winter and early spring months, and the Middle Mississippi normally contributes more during the summer and early fall.

Flows in the Lower Mississippi River follow a general monthly trend as shown in Figure 1. Discharges are generally highest from February through June due to snow melt and early spring rains. At Vicksburg, the mean annual flow from 1929 to 1974 was 569,000 cfs.

High flows redistribute large quantities of sediment, both in suspension and along the bed, and it is these flows which bring about the most dramatic changes in channel pattern and alignment. During high flow, banks are cut, pool areas are scoured, and sediment is deposited in crossings, middle bars, and overbank areas. Most of the annual peak discharges have occurred in April and May but several have occurred in February and March as shown in Figure 2. The highest discharges of record at Vicksburg from 1897 to 1975 are shown in Table 1.

The Mississippi River is subject to periods of low flow, particularly from September through November as shown in Figure 3. During this period, it is sometimes necessary to dredge some of the crossings which have built up with sediment deposited during the high flows in order to keep the navigation channel open.

Channel Characteristics

In a natural river, the discharge, type of hydrograph, type of bed and bank material, and sediment concentration are the major determinants of the plan and profile geometry. Leopold and Maddock[11] showed that up to a bank-full stage in a natural river section the width, depth, and

velocity vary with discharge as simple power functions. These functions can be written as:

$$W = aQ^b \ , \ \ \overline{D} = cQ^f \ , \ \ \overline{V} = kQ^m$$

where

W = width of flow, ft

$a, b, c, f, k,$ and m = constants for a particular cross section

Q = water discharge, cfs

$\overline{D}$ = mean depth of flow in the cross section, ft

$\overline{V}$ = mean velocity of flow in the cross section, fps

Then from continuity these functions can be combined to give

$$Q = W\overline{D}\overline{V} = (aQ^b)(cQ^f)(kQ^m)$$

and it follows that

$$b + f + m = 1$$

and

$$(a)(c)(k) = 1$$

Data from the Mississippi River at the Arkansas City, Vicksburg, and Natchez discharge ranges were used to plot the relations of width, depth, and velocity to discharge and are shown in Figures 4, 5, and 6, respectively. In order to develop graphs of this type and to be able to compare data from year to year, the data need to be consistently taken at the same cross section for any particular location. The Arkansas City, Vicksburg, and Natchez discharge ranges have been located at their respective cross sections since 1928, 1942, and 1956, respectively, and so data from each range were plotted in order to determine the range of values for the exponents b, f, and m and to see if there have been any significant changes. An increase or decrease in the value of the exponents would indicate a larger or smaller rate of increase of the dependent variables with discharge. Values of the exponents for the three discharge ranges are summarized in Table 2.

In the Vicksburg District, several cutoffs were made on the Mississippi River during the 1930's. In the upper end of the District around Arkansas City, cutoffs were not made until 1933. Since data prior to cutoffs were available at Arkansas City, the values of b, f, and m were computed for water years 1929 and 1933 to compare with those after cutoffs. Table 2 shows in general, with some deviations, that since 1929 the values of b and m have increased and values of f have decreased at Arkansas City. An increase in b indicates a larger rate of increase of width with discharge, while a decrease in f indicates a smaller rate of increase of depth with discharge. This would suggest that the cross section has become more dish shaped. An increase in m indicates a larger rate of increase in velocity with discharge. These changes may have been initiated by the cutoff program which increased the river gradient. However, since values of b, f, and m were not computed for all the years since 1929, other fluctuations may have also occurred.

At Vicksburg, from 1950 to 1972, values of b tended to increase and values of f tended to decrease. This trend may have been due to the outward growth of a low sandbar on the right side of the channel. Then, during 1973 and 1974, there was a decrease in the value of b and an increase in the value of f. These later trends were probably due to the flood flows which caused the sandbar to retreat. Values of m decreased during 1950-1971 and then began to increase during the following years.

At Natchez, no specific trends in the exponents were noted for the years for which values of b, f, and m were computed. However, Figure 6 shows that since 1971 there has been an increase in depth and a decrease in velocity at the Natchez cross section. These trends are probably due to the flood flows.

The average values of the exponents b, f, and m at the three discharge ranges determined from the data in Table 2 are:

	b	f	m
Arkansas City	0.170	0.282	0.547
Vicksburg	0.280	0.185	0.534
Natchez	0.051	0.366	0.583

These values show that the width increases at a faster rate with discharge than the depth at Vicksburg, while the converse is true at the other stations. However, because the three discharge ranges are each located in rather narrow sections of the river, values of b , f , and m at these ranges should not necessarily be considered representative of the reaches of river between them. The average values of the exponents b , f , and m from several studies on various river systems are summarized in Table 2A.

Because the mean annual flow of the Mississippi River is essentially the same throughout the Vicksburg District, the relationships of b , f , and m to discharge in the downstream direction, as Leopold and Maddock[11] computed for other rivers, were not relevant.

Suspended Sediment

Suspended sediment measurements are being made routinely on the Mississippi River in the Vicksburg District at the Arkansas City, Vicksburg, and Natchez discharge ranges. The purpose of these measurements is to establish long-range trends in sediment characteristics and sediment transport.

Suspended sediment samples taken at Arkansas City and Vicksburg from 1929 to 1931 were obtained using the Vicksburg sediment trap, which secured samples of about 8 oz of water.[3,4] This trap consisted of a 12-in. nipple of 1-1/4-in. galvanized pipe with a swinging check valve on each end. About 50 lb of pig lead were cast around the pipe in the shape of two cones placed base to base, and near the apex of the top cone a small iron rod was inserted with an eyehole in the end for attaching the hauling line. The suspending cable was attached so that the valves opened upward and the trap hung at about 1-1/2 in. off-plumb, leaning in the direction necessary to prevent the valve checks from assuming a neutral position when open. As the trap was lowered, the check valves were forced open by the resistance of the water, allowing unimpeded flow through the pipe. At the proper depth, the downward motion was suddenly checked; the valves closed and were held closed by the

reversed pressure of the water as the trap was brought upward. At eight sampling verticals spaced about equally across the river, samples were taken from the surface, middepth, and near the bottom, and then combined horizontally to form a composite sample; the sediment concentration of each was multiplied by the percent of total discharge carried in the respective vertical divisions. The sum of these was taken as the mean concentration of sediment through the cross section.

Since 1967, suspended sediment samples have been taken with the P-61 sampler.[17] Sampling verticals are located at centroids of equal portions of flow as defined by streamflow measurements. Six verticals are sampled across each range, and four suspended samples are taken in each vertical at centroids of equal quarters of flow. These centroids are located at 10.7, 32.3, 57.0, and 84.0 percent of the total depth. All suspended sediment samples are analyzed for concentration, and the results are expressed in parts per million (ppm) by weight. The concentration of sand in each suspended sample is determined, and the concentration of fine sediment (particles finer than 0.062 mm) is determined for one sample in each vertical. The sands are separated from the fines by washing the samples over the Tyler Standard Sieve No. 230. The average of these samples is then taken to be the mean concentration of sediment throughout the cross section. The suspended sediment load passing through the cross section is then determined by using the following equation:

$$Q_s = \frac{C \times Q}{371}$$

where

Q_s = suspended sediment discharge, tons/day

C = suspended sediment concentration, ppm by weight

371 = constant for conversion of units

Suspended sediment measurements taken during 1929-1931 and 1967-1974 at Arkansas City, Vicksburg, and Natchez are presented in Tables 3, 4, and 5, respectively.

During 1929-1931, measured suspended sediment yields varied as follows:

Location	Yield, tons/day		Concentration ppm	Q Weighted Concentration ppm
Arkansas City	Mean	599,000	519	485
	Max.	2,629,000	2,650	
	Min.	39,000	116	
Vicksburg	Mean	577,000	479	528
	Max.	3,171,000	2,338	
	Min.	25,000	68	

Suspended sediment measurements made during 1967-1974 varied as follows:

Location	Yield, tons/day		Concentration ppm	Q Weighted Concentration ppm
Arkansas City	Mean	587,000	275	305
	Max.	2,124,000	1,054	
	Min.	51,000	68	
Vicksburg	Mean	695,000	296	324
	Max.	2,865,000	1,021	
	Min.	66,000	79	
Natchez	Mean	642,000	271	276
	Max.	1,917,000	714	
	Min.	69,000	89	

Comparison of the data for the periods 1929-1931 and 1967-1974 indicates that the suspended sediment concentrations have decreased since 1931 by roughly 40 percent. Much of this decrease could be due largely to the bank stabilization program. The bank revetment construction history for the Vicksburg District is shown in Figure 7 which indicates that the major part of the work has been done since 1945. Figure 8 shows the caving bank history for the Vicksburg District for three periods of time: 1877-1892, 1931-1941, and 1965-1972. Between 1892 and 1972, there has been a 92 percent reduction in the total volume of bank caving. Of this total reduction, 27 percent occurred between 1892 and 1941, and 65 percent occurred between 1941 and 1972. Thus, the impact that bank stabilization has had on reducing the quantity of material entering the river from caving banks can be realized.

Figures 9, 10, and 11 show the annual average measured suspended sediment yield and concentration for the three discharge ranges for water years 1968 through 1974. During 1969, the Vicksburg discharge range showed very high sediment yields and concentrations. These high measurements were probably due to increased turbulence and scour resulting from the construction of the piers for the new highway bridge which is about 0.3 mile upstream of the range.

During 1967-1974, measured suspended fines (material finer than 0.062 mm) were found to vary as follows:

Location	Yield, tons/day		Concentration ppm	Q Weighted Concentration ppm
Arkansas City	Mean	376,000	188	196
	Max.	1,505,000	940	
	Min.	43,000	54	
Vicksburg	Mean	404,000	188	188
	Max.	1,448,000	678	
	Min.	56,000	69	
Natchez	Mean	402,000	188	173
	Max.	980,000	591	
	Min.	62,000	79	

Figures 12, 13, and 14 show the annual average fine suspended sediment yield and concentration for Arkansas City, Vicksburg, and Natchez, respectively, for water years 1968 through 1974.

Figures 15, 16, and 17 present the monthly trends for measured suspended sediment which are similar to that of streamflow (Figure 4). The higher suspended sediment yields and concentrations generally occur between December and May. The extreme maximum suspended sediment yields occurred in December and February, while the extreme maximum concentrations occurred in November and December. Minimum suspended sediment yields and concentrations generally occur from August through October. Monthly average weighted mean concentrations ranged from 122 to 434 ppm. Monthly average measured suspended sediment yields ranged from 109,000 to 1,238,000 tons per day.

Monthly trends of measured fine suspended sediment yield and

concentration (material finer than 0.062 mm) are shown in Figures 18, 19, and 20. The higher suspended fines yields occur from December through June. Monthly average weighted mean fines concentrations ranged from 103 to 301 ppm. Monthly average measured suspended fines yields ranged from 91,000 to 643,000 tons per day.

Figures 21, 22, and 23 show the monthly trends of the ratio of measured fine to measured total suspended sediment at Arkansas City, Vicksburg, and Natchez, respectively, during 1967-1974. The ratio is a minimum from December through May when there is an increase in suspended sands with discharge. The extreme minimum of the ratio is 0.20, and the extreme maximum is 0.97. The monthly average suspended fines content varies between 48 and 86 percent of the total measured suspended sediment. The average ratio of measured fine to measured total suspended sediment at Arkansas City, Vicksburg, and Natchez is 0.70, 0.67, and 0.70, respectively.

Because the sediment sampling frequency at the discharge ranges was increased from monthly to weekly in May 1972, it was possible to compute annual sediment yields for subsequent water years. The results were as follows:

Water Year and Location	Total Yield 1000 tons	Fines Yield 1000 tons	Q Weighted Mean Concentration, ppm Total	Fines
1973				
Arkansas City	254,100	160,900	277	175
Vicksburg	315,800	164,400	323	168
Natchez	284,900	155,100	298	162
1974				
Arkansas City	289,900	185,400	355	227
Vicksburg	295,300	178,700	347	210
Natchez	249,900	167,600	296	198

From these figures, it appears that there is more material in suspension at Vicksburg than at the other stations. This may be due to the added turbulence caused by the bridge piers upstream of the Vicksburg discharge range or to the input from the Yazoo River.

A study was made to determine whether or not the relation of

measured suspended sediments to discharge has changed over the years. In this study, the total suspended sediment yields, fine sediment yields, total suspended sediment concentrations, and the suspended sand concentrations were plotted against the corresponding water discharges, and a least-squares regression line was drawn to represent the relation for each year of record (Figures 24-35). The lines were not intended to be rating curves but only lines of general trend. In most cases, simple power functions approximated the relationship between the suspended sediments and the discharge and can be expressed as follows:

$$Q_s = pQ^j \ , \quad Q_{sf} = tQ^x \ , \quad C_T = rQ^y \ , \quad C_s = nQ^z$$

where

p,t,r,n,j,x,y, and z = constants for a particular cross section

Q_{sf} = suspended fines discharge (material finer than 0.062 mm), tons/day

C_T = total suspended sediment concentration, ppm by weight

C_s = concentration of suspended sands, ppm by weight

However, it was found that for the 1973 water year the simple power function did not represent the relation between the total suspended sediment concentration (C_T) and discharge. This was primarily due to the decrease in total suspended sediment concentration when the stage went above bank-full. The decrease was found to be most pronounced in the material finer than 0.062 mm and can probably be partially attributed to dilution.

During the period 1929-1931, the exponent j was found to be 0.965 and 1.209 at Arkansas City and Vicksburg, respectively. From 1968 to 1974, the value of j was larger and varied from 1.269 to 2.430 at the same two ranges. A larger value of j indicates a steeper sloping line and, thus, a greater rate of increase of suspended sediment with discharge. At Natchez, data were available during 1972-1974, and j was found to vary from 1.104 to 1.496. The values of all the exponents are summarized for each year of record in Table 2.

Figures 24, 25, and 26 show the relation of suspended sediment yield and discharge. The measured suspended sediment yield at any given discharge less than 800,000 cfs was significantly lower in 1968-1974 than in 1929-1931 (Figures 24 and 25). As discussed earlier, this reduction could be due largely to the bank stabilization program. Since 1968, the relation of sediment yield to discharge has fluctuated from year to year at Arkansas City and Natchez. However, at Vicksburg there was a general trend for the high discharges to carry less sediment each year from 1969 to 1973; then, in 1974, there was an increase in sediments for the high discharges. The annual variation in the relation between suspended sediments and discharge is also shown in Figures 27-35.

For each year of record, graphs were made in which the relation between suspended sediment and discharge was plotted according to water temperature and rising or falling stage. No consistent relationships were found from these graphs for water temperature or stage. However, if any one particular rise within a year's hydrograph was considered separately, then the differences in suspended sediments for rising and falling stages could be detected. During 1973, for a given discharge, the suspended sediment yield and concentrations for rising stages were generally greater than for falling stages. Relationships between sediment concentrations and temperature probably exist, but in most cases they were obscured by other factors.

The annual variations in the average water temperature at the three discharge ranges for the period 1962-1974 are shown in Figures 36, 37, and 38. The variations were found to be very consistent from year to year; and there was essentially no difference in the average water temperatures between the three ranges even though the upstream and downstream ranges are separated by 204 river miles.

Figures 39, 40, and 41 show the relationship of stage, suspended sediment concentration, depth below average low water plane (ALWP), and velocity to discharge during the major rise of 1973. These figures show that in general for a given discharge the suspended sediment concentration and velocity were greater when the discharge was increasing than when it was decreasing. Also, the stage and mean depth below ALWP

were generally less for increasing discharge than for decreasing discharge, except at Natchez where the relationship of depths below ALWP to discharge was reversed and fluctuated considerably.

Bed Material

Samples of bed material obtained in the Vicksburg District were collected with a drag bucket prior to 1967. During 1967, the District began using the BM-54 bed-material sampler[17] except for collection of bed samples on the left side of the Vicksburg discharge range. At Vicksburg, the river channel is adjacent to a limestone bluff which has a base extending out into the bed of the river. Because of the rock bottom, the drag bucket is used rather than risk damaging the BM-54 sampler. The BM-54 has been designed such that it is less likely than the drag bucket to permit fine material to be washed out as the sample is taken and then raised through the water column.

During 1967, the Vicksburg District took 77 companion samples using the drag bucket and the BM-54 to determine if there was any difference in the samples obtained. The D_{84}, D_{50}, and D_{16} sizes for corresponding samples were compared as follows:

	Average Size, mm		
	D_{84}	D_{50}	D_{16}
Drag bucket	1.213	0.422	0.281
BM-54	1.138	0.422	0.265
Percent difference	6.6	0.0	6.0

In almost all sample pairs, the compared sizes were very close; however, the BM-54 apparently retained slightly more of the finer material while the drag bucket gathered larger gravel-size material.

From August through September of 1932, which was during low water, a survey of bed materials of the Mississippi River was made between Cairo, Illinois, and New Orleans, Louisiana.[5] In this survey, 531 samples were taken from the thalweg of the river of which 304 samples were in the Vicksburg District.

Since 1967, bed-material samples have been taken in the Vicksburg District in conjunction with the suspended sediment samples. Bed-material samples are obtained at the same sampling verticals as the suspended sediment samples which are located at centroids of equal portions of flow. Six samples are taken routinely across each of the three main discharge ranges. During 1966-1972, periodic bed samples were taken at special potamology sediment ranges located throughout the Vicksburg District's portion of the river. During each sampling, 4 to 12 bed samples were taken across each range depending on the width of the cross section. Since 1972, the special potamology sediment ranges have been changed, and samples at these ranges are now taken only at the center of flow. Consequently, when comparisons of samples are made, the procedures used in sampling must be kept in mind.

The sieve method has been used to analyze all bed-material samples; however, since 1966, no mechanical analysis has been made of samples which are finer than the 200 sieve (0.074 mm). Material finer than 0.074 mm is classified as silt-clay material.

Bed-material samples are analyzed individually, and the results are averaged to give the representative particle-size distribution for the entire cross section. The procedure for computation of the representative size distribution is to determine the percent of the total weight retained on each sieve, sum the percent retained on each fraction, and then divide each total by the number of samples to compute the average percent retained as well as the cumulative percent finer distribution (composite size distribution). Representative size distributions for each of the 25 study reaches for 1932 and 1966-1974 are presented in Tables 6-15. Physical data of the bed material are presented in Table 16.

Figures 42, 43, and 44 show the variation in average bed-material sizes at the Arkansas City, Vicksburg, and Natchez discharge ranges, respectively, for the period 1967-1974. The procedure for computing the average sizes was to form a composite size distribution from each year's set of bed-sediment data for each of the three discharge ranges. Then,

from each composite size distribution, the D_{84}, D_{50}, and D_{16} were determined.

At Arkansas City (Figure 42), there was a significant increase in the D_{84} during 1968. At that time, there was an exposed gravel layer on the right side of the channel. Following 1968, the layer washed out and the D_{84} of the cross section decreased.

At Vicksburg (Figure 43), the D_{84} increased during 1968-1970. This increase may have been due to increased turbulence resulting from the construction of the new bridge piers, beginning early in 1969 just upstream of the discharge range. The increase in the D_{84}, D_{50}, and D_{16} sizes during 1973 was probably due to the unusually high flows of that year.

At Natchez (Figure 44), there has been a general increase, with some minor deviations, in the D_{84}, D_{50}, and D_{16} sizes during 1970-1974. This increase may be due to the migration of larger sizes downstream; however, the period of record at this station is too short to draw any definite conclusions.

Figures 45-54 show the variation in the composition of bed material in the Vicksburg District for 1932 and 1966-1974. To interpret the curves, the vertical distances between adjacent jagged lines represent the percentage of the material falling in the range between the lines. Comparison of these figures shows that there has been a general increase in the percentage of material finer than 0.295 mm since 1932. Conversely, there has been a decrease in the percentage of material larger than 0.589 mm. The percentage of material between 0.295 and 0.589 mm was greater in 1966 than in 1932; however, by 1974, the percentage had decreased to approximately what it was in 1932.

Figure 55 shows the variation in the median size (D_{50}) of bed materials in the Vicksburg District for the periods 1932, 1968, 1971, and 1974. The D_{50} for these periods varies from 0.106 to 0.577 mm. The general trend has been a decrease in the D_{50} size since 1932, which is contrary to what one might expect. However, the variation in sampling techniques and in the number of samples taken each year within each reach needs to be kept in mind when interpreting the averages.

A sediment size classification which has been recommended by the Subcommittee on Sediment Terminology of the Committee on Dynamics of Streams of the American Geophysical Union[18] is presented in Table 17. Numerous sediment size scales have been devised by various scientific groups to systematize the size designation. However, specialists in sedimentation are prone to adhere to the original Wentworth scale, or some variation thereof. The size classification in Table 17 embraces and expands the Wentworth scale. This table also shows that the median diameter of bed material in the Vicksburg District falls within the range of very fine to coarse sand.

The variations in the weighted average bed-material sizes (representative bed-material sizes for the District as a whole) for the years 1932 and 1966-1974 are shown in Figure 56. The procedure used in computing the weighted average bed-material sizes was to determine a composite size distribution for each study reach which was assumed to be representative of that reach. These composite distributions were then averaged using the study reach length as the weighting factor. The D_{84}, D_{50}, and D_{16} were then determined from the weighted average size distribution. In 1966, the D_{84} and the D_{50} were smaller than in 1932, while the D_{16} was larger. Since 1966, there has been a general decrease in the representative bed-material sizes except during 1967 and 1973. The size variation between 1966 and 1967 may be due to sampling, while the size increase during 1973 may be due to the flood of that year. The flood flows of 1973 gave the river a much greater sediment transport capability which probably resulted in a coarsening of the bed material. During the period of record, the weighted average D_{50} has varied from 0.376 to 0.304 mm between miles 422.8 and 606.0 above head of passes (AHP).

It is interesting to note that even though there has been a general decrease in sampled bed-material sizes for the District as a whole, there has been a significant increase in the extent of exposed gravel deposits on middle bars and islands throughout the District since the floods of 1973, 1974, and 1975. Aerial reconnaissance during the low-water seasons following the floods revealed extensive gravel deposits

from the northern end of the District to as far south as Natchez Island, mile 357, which is about 78 miles below Vicksburg. It is believed that these gravels were carried in transport during the flood flows, because they are on top of islands and middle bars which were built up in elevation during the high water. Evidently, during the high flows, the river scoured down into some of the old gravel layers and transported this bed material up onto the island and sandbar surfaces. Gravel deposits were generally found at the head end of islands, middle bars, and point bars.

Several field trips were made during the 1973-1975 low-water seasons to investigate the size of material in the gravel deposits and to examine the sand waves left by the high flows. Photos 1 and 2 were taken 26 September 1975 at the upstream end of the middle bar located in the left channel at Cottonwood, approximately mile 470 AHP. It was in this area that the largest sizes of material were found. Photo 1 is a typical view of the gravel cover that was exposed on the crests of dunes. This gravel layer was continuous, lying immediately below the shallow sand cover shown in the photograph. Photo 2 shows some of the larger sizes of material which measured 8 to 12 cm (3 to 5 in.) along their major axis.

Photos 3 and 4 were taken 23 September 1975 of the Togo Island Dike No. 2, located approximately at mile 416 AHP. Photo 3 is a general view of the dike looking inshore from about 350 ft out. The interstices in the quarry stone were found to be filled with gravel, some of which were 6 cm (2+ in.) in diameter along their major axis (Photo 4). It was interesting to find gravel on top of the dike since the dike crown is roughly 10 to 15 ft above the riverbed. It is rather doubtful that the gravel rolled up the side of the dike; therefore, the material must have been carried in suspension, possibly due to the turbulence caused by the dike during high water. This gives an indication of the sizes of material that the river can carry in suspension. However, gravel-size material is never found in the suspended sediment samples since the nozzle on the P-61 suspended sediment sampler is only 0.48 cm (3/16 in.) in diameter.

Photo 5 was taken 3 October 1973 at the head of Middle Ground

Island (mile 409 AHP) showing a general view of the gravel cover that was left following the 1973 flood. The following year (7 August 1974) a second field trip was made to Middle Ground Island. Photos 6 and 7 show the typical sizes of material found with the larger sizes measuring 3 to 4 in. along the major axis. A trench was cut to show the thickness of the gravel cover and underlying sand. As shown in Photo 7, the gravel was found to be an armor layer roughly the thickness of the larger materials, and the underlying sand was found to have gravel interspersed throughout.

Photos 8 and 9 were taken 22 September 1975 at the head of the middle bar around mile 388.4 AHP. Photo 8 is a view of the extensive gravel cover, and Photo 9 is a close-up showing the size of material found. Some of the larger sizes of material measured 6 to 8 cm (2 to 3 in.) along their major axes.

The extent and size of material found in the gravel deposits throughout the Vicksburg District indicate that there is larger material transported by the river during high flows than is ever sampled during routine sampling. The quantity of sediment transported in the Mississippi River has always been described as being very large in volume, but the sizes of material transported are evidently larger than usually suspected.

Huge quantities of sediment are transported along the riverbed in the form of large sand waves. During the field trip to Rodney (22 September 1975), well-preserved sand waves from the 1975 high water were found on the lower end of the middle bar around mile 387 AHP. Photos 10, 11, and 12 show some typical views of the sand waves, most of which ranged from 6 to 10 ft in height at their crest. Longitudinal profiles were made during 1973 and 1974 at various points on the hydrograph in order to make comparisons of the bed forms within the main channel. Plates 3 and 4 show longitudinal profile comparisons for high and low stages in the Ozark-Eutaw Reach (see Plate 1 for location). Plate 3 shows that at a 36-ft stage, sand waves approached 30 ft in amplitude and 400 to 600 ft in length, while at a 12-ft stage, they diminished to around 5 or 10 ft in amplitude and 300 to 500 ft in length. The general

smoothing out of the bed during low stages is more dramatically illustrated in Plate 4.

The massiveness of the bed load on the Lower Mississippi is exemplified by the extensive gravel deposits and the enormous sand waves; however, the magnitude of this load is something that cannot be effectively measured thus far.

Roughness Characteristics

The roughness coefficient and slopes are two important hydraulic parameters; at the same time, they are two of the more difficult parameters to isolate and study. In a river the size of the Mississippi, the roughness varies considerably across any one cross section, and the water-surface plane takes on a complex geometry of intersecting sloping planes. Thus, an attempt to determine a roughness coefficient that is representative of an entire cross section or reach is difficult and subject to considerable error.

Various studies have been made of the hydraulic characteristics of the Mississippi. A rather thorough study of the Vicksburg District's portion of the Lower Mississippi was made by M. G. Anding[19] in 1970. In his study, Anding made an intensive analysis of data from one typical meandering reach and one typical straight reach. The hydraulic parameters were plotted in profile to indicate the wide variation in data from range to range, to show the differences in magnitude between high and low stages, and to compare meandering reaches with straight reaches. Data from the Ozark-Eutaw Reach were selected to illustrate results in a meandering reach, and Cracraft-Carolina data were used for a straight reach (see Plate 1 for location).

In Anding's study, the roughness factor "n" represents a coefficient in the equation

$$\bar{V} = \frac{1.486}{"n"} \bar{D}^{2/3} S^{1/2} \tag{1}$$

where S is the slope of the energy grade line.

Figure 57 shows the variation of the roughness "n" and energy slope for a meandering reach at a low stage of 4 ft above ALWP. The energy slope generally varies directly with "n". Values of "n" vary throughout the reach from 0.02 to 0.04 and average about 0.03.

Figure 58 shows data for the meandering reach at a higher stage of 30 ft above ALWP. There is a significant increase in slope with stage, but there is a very limited change in the roughness "n" from low to high stage.

Figure 59 shows the same parameters for a straight reach at a low stage of 2 ft above ALWP. In this case, the slope is roughly comparable to that of the high stage in the meandering reach. The roughness "n" varies throughout the reach from approximately 0.026 to 0.048 and averages 0.033, which is a little higher than for the meandering reach.

Figure 60 shows data for the straight reach at a high stage of 28 ft above ALWP. When Figures 59 and 60 are compared, a significant decrease in energy slope is noted with again a very limited change in "n".

Comparison of average slope for a meandering reach and a straight reach exemplifies the change in slope with stage and the relative reversals of slope from high to low stage. At low stages, the meandering reach has flatter slopes.

Figure 61 presents the variation of "n" with stage for both the meandering reach and the straight reach. In addition, this figure shows that there is little or no change of "n" with changes in stage. There is also no great variation in the average value of "n" for a meandering reach compared with a straight reach. However, there was a wide variation in "n" from range to range as shown in Figures 57-60.

To compute the roughness coefficient it is necessary to measure longitudinal differences in the water-surface elevation; as Anding points out, the pattern of slopes in the Lower Mississippi River is very complex. The water surface consists of planes which slope not only longitudinally but also transversely.

Surveys of the study reaches which were used to determine water-surface elevations for Anding's study included gages located on one or

sometimes both banks of the river at intervals of 3,000 to 5,000 ft. Slopes were then computed between these gages. However, it must be kept in mind that the river can be greater than 5,000 ft in width; thus, 5,000 ft between gages is a very short segment of river in relative terms. Due to the complex water-surface plane, a roughness coefficient computed using slopes between 5,000-ft segments of river may not be a true indication of the actual roughness since the computation may be biased by the transverse slope.

A recent study has been made by the Potamology Section of the variation of the roughness "n" with discharge at the Arkansas City discharge range, mile 565.9 AHP. In this study, a much longer segment of river was used to determine the water-surface slope. The slope computations were made by determining the difference in water-surface elevation between the local gage at mile 565.9 AHP and the Arkansas City gage at mile 554.1 AHP, a distance of 11.8 miles. Plate 5 shows the location of the Arkansas City discharge range and the gages used in slope computations. The locations of dikes and bank revetment are also shown along with the dates of construction. This section of river is quite sinuous and contains a variety of cross-sectional shapes including divided flows at higher stages. Figure 62 shows a summary of the variation of the water-surface slope with discharge for water years 1969-1974. The data show that the slope decreases with increasing discharge and that the extreme values vary by a factor of 2 for any one discharge.

The cross section at the discharge range, mile 565.9 AHP, and the water-surface slope were used for computing "n" in Equation 1. Data were not available for the computation of the energy slope, and so the water-surface slope was substituted. In general, for open-channel flow the water-surface slope can be assumed to approximate the energy slope.

The computed "n" values were plotted against the corresponding water discharges, and a line was drawn to represent the relation for each year. Figure 63 shows a summary of the variation of "n" with discharge for water years 1969-1974. The data show that "n" decreases with increasing discharge and varies over a larger range than shown in Anding's study. The values of "n" range from a high of 0.087 at low

discharge to a low of 0.018 at high discharge. From 1969 to 1970, there was a general increase in "n" , while from 1970 to 1972, there was a general decrease. During 1973 and 1974, values of "n" were much higher than previous years for discharges less than 1,000,000 cfs. The increase in "n" was probably due in part to large volumes of bed sediments transported in the form of sand waves during the high water of those years (Plates 3 and 4 and Photos 10, 11, and 12). For discharges greater than 1,000,000 cfs, "n" values were roughly the same for 1969-1974.

For each water year during 1969-1974, the relation between the roughness "n" and discharge was plotted according to rising or falling stage and water temperature. No consistent relationships were found for the rising or falling stages; however, there did seem to be some correlation with the water temperature in that the warmer temperatures tended to plot above the cooler ones.

When the major rise for each year's hydrograph was considered separately, then the differences in the roughness between the rising and falling stages could be detected. As shown in Figure 64, during the major rise of 1971, the "n" values were higher on the rising limb than on the falling limb. Conversely, during 1973, the "n" values were lower on the rising limb than on the falling limb. Data plotted for other years showed no consistent relationships.

In order to see what long-term changes may have occurred in the roughness coefficient at the Arkansas City discharge range, data from 1929 to 1932 were used to compute the roughness "n" . Water-surface slope was again used in the computation of "n" ; however, a problem was encountered because no explanation was given with the data as to what gages had been used in the computation of water-surface slope. After examining some of the old comprehensive surveys, it appeared that the slopes may have been computed for a very short segment of river. As discussed earlier, this may introduce more errors in the computations.

Figure 65 shows the variation of the roughness "n" with discharge for the 1929-1932 period. The plotted points are quite scattered with "n" varying from 0.025 to 0.054. The large scatter in "n" values

may be due in part to the way slope was computed. The data are plotted according to rising and falling stages, but there does not seem to be any apparent correlation with the rises or falls. Water-temperature data were not given, so determination of the variation of "n" with temperature was not possible.

Due to the different locations of gages used in computing the slopes for the recent data and the 1929-1932 data, there can be no true comparison of "n" for the two different time periods.

In order to see if the results from the Arkansas City discharge range were typical, data from the Helena discharge range, mile 662.7 AHP, were used to see how "n" varied with discharge. The Helena discharge range was chosen, since there were no other discharge ranges within the Vicksburg District which had a gage close by with published data for determining slope. Slope computations were made by determining the difference in water-surface elevation between the Helena gage at mile 663.3 AHP and the high-water gage 126 at mile 652.5 AHP, a distance of 10.8 miles. Water-surface slope and the cross section at the discharge range, mile 662.7 AHP, were used in the computation of the roughness "n" , and the data were plotted the same as for the Arkansas City discharge range. Plate 6 shows the location of the Helena discharge range and the gages used in slope computations. In addition, the dikes and bank revetment locations are shown with their respective dates of construction. This reach is much straighter than the Arkansas City area, and there is a bridge crossing the river at Helena about 1 mile downstream of the discharge range. Like the Arkansas City area, the Helena Reach has divided flows at medium to high stage.

Figure 66 shows a summary of the variation of "n" with discharge for water years 1957 and 1965-1973. The plotted data show again that "n" decreases with increasing discharge. The values of "n" range from a low of 0.018 at high discharge to a high of 0.067 at low discharge. The values of "n" at Helena for low discharge are less than they are at Arkansas City. From 1957 to 1966, there was an increase in "n" , while from 1966 to 1972 there was a general decrease. It would be difficult to say whether or not river training structures caused this

change without a more detailed study of channel geometry changes. During 1973, values of "n" were much higher than previous years. This increase in "n" was probably due in part to large volumes of bed sediments transported in the form of sand waves during the flood as was mentioned earlier.

No consistent relationships were found from graphs in which the relation of "n" and discharge was plotted according to rising or falling stage and water temperature. However, if the major rise for each year's hydrograph was considered separately, then the differences in the roughnesses between the rising and falling stages could be detected. As shown in Figures 67 and 68, in most cases the "n" values were larger on the falling limb than on the rising limb.

Figure 69 shows the variation of the roughness "n" in the Vicksburg District for flood discharges during 1945, 1973, and 1974. These "n" values were obtained from the "Mississippi River Flowline Study" done by the Hydraulics Branch of the Vicksburg District. The mean, minimum, and maximum computed "n" values and the peak discharges were as follows:

	Year		
	1945	1973	1974
Mean	0.026	0.030	0.027
Minimum	0.021	0.020	0.020
Maximum	0.036	0.038	0.032
Peak Q, cfs, at Vicksburg	1,922,000	1,962,000	1,526,000

The 1973 "n" values tended to be the highest, and the 1945 values tended to be the lowest; however, while the 1973 discharge was the highest for these 3 yr, the 1974 discharge was lowest. This would suggest that the value of "n" is greatly dependent on the channel conditions set up by previous flows. The bed forms (roughness elements) of the river are constantly changing with the hydrograph; however, changes in the roughness tend to lag behind changes in the hydrograph.[20] The change in roughness is dependent on the rate of change in the hydrograph; therefore, a fast rise or fall will probably occur with a different

roughness than a slow rise or fall. Also, because the geometry of a stream is related to the discharge, a period of low flows will develop a different channel than a period of high flows; thus, the floods occurring after each will be different.

In summary, the wide variation that occurs in "n" at a range for any one discharge clearly exemplifies the problems associated with trying to pick a value of "n" to use in hydraulic computations for alluvial river systems. Values of "n" varied by a factor of 2 at low discharges and by a factor of 1.3 at high discharges. Consequently, great care needs to be taken in the use of roughness coefficients.

Since the roughness "n" is a computed parameter which is dependent on several hydraulic variables, it is difficult to isolate "n" and study it in relation to channel improvement works. Isolating "n" does not separate the effects of the individual variables used in computing "n" . In order to fully understand the changes in the roughness coefficient, it would be necessary to make a detailed study of the changes in slopes, velocities, cross-sectional geometry, plane geometry, and other related fluvial geomorphic parameters of the river in relation to channel improvement works.

Summary

Flows in the Lower Mississippi River follow a general monthly trend in which the discharges are usually highest during the period from February through June due to snowmelt and early spring rains. Most of the annual peak discharges have occurred in April and May, but several have occurred in February and March. Most of the annual low flows have occurred from September through November. At Vicksburg, the mean annual flow for the period 1929-1974 was 569,000 cfs.

In a natural river section, the width, depth, and velocity vary with discharge as simple power functions as follows:

$$W = aQ^b \ , \quad \overline{D} = cQ^f \ , \quad \overline{V} = kQ^m$$

Average values of the exponents b , f , and m were determined for the three discharge ranges and are as follows:

	b	f	m
Arkansas City	0.170	0.282	0.547
Vicksburg	0.280	0.185	0.534
Natchez	0.051	0.366	0.583

Because the three discharge ranges are each located in rather narrow sections of the river, values of b , f , and m at these ranges should not be considered representative of the reaches of river between them.

Suspended sediment measurements at Arkansas City and Vicksburg show that the concentration of suspended sediments has decreased since 1931 by roughly 40 percent. This decrease could be due largely to the bank stabilization program which has reduced bank caving by 92 percent. The higher suspended sediment yields and concentrations generally occur from December through May, while minimum yields and concentrations generally occur from August through October. The average ratios of measured fine to measured total suspended sediment at Arkansas City, Vicksburg, and Natchez during 1967-1974 were 0.70, 0.67, and 0.70, respectively.

The suspended sediment yield was found to vary with the 0.965 to 1.209 power of the water discharge during 1929-1931. For the period 1968-1974, the sediment yield varied with the 1.104 to 2.430 power of the water discharge. The suspended sediment yield at any given discharge less than 800,000 cfs was significantly lower in 1968-1974 than in 1929-1931.

The median size of the bed material generally falls between 0.106 and 0.577 mm. There has been a general decrease in the representative bed-material sizes since 1932, with the weighted average D_{50} varying from 0.376 to 0.304 mm between miles 422.8 and 606.0 AHP. However, there has been a significant increase in the extent of exposed gravel deposits on middle bars and islands throughout the District since the floods of 1973, 1974, and 1975. Extensive gravel deposits were found from the northern end of the District to as far south as Natchez Island, mile 357, which is about 78 miles below Vicksburg. The larger sizes of

materials measured 8 to 12 mm (3 to 5 in.) along their major axes.

The massiveness of the bed load carried by the Mississippi River is exemplified by longitudinal profiles made during high water. These profiles show sand waves that approach 30 ft in amplitude and 400 to 600 ft in length moving down the channel.

Studies of the hydraulic characteristics of the Lower Mississippi River by Anding[19] showed that when the roughness coefficient "n" was averaged for a reach of river there was little change of "n" with changes in stage. However, there was a fairly wide variation in "n" from range to range. Recent study has suggested that the "n" values are greatly dependent on the gage locations used for the water-surface slope computations due to the complex geometry of the water-surface plane. Consequently, in the present study, slopes were computed over longer reaches of river, and the values of "n" at a range were found to decrease with increasing discharge and to vary over a larger range of values than shown by Anding. Values of "n" at a range varied from a high of 0.087 at low discharge to a low of 0.018 at high discharge. At low discharges, values of "n" varied by a factor of 2; at high discharges, values of "n" varied by a factor of 1.3. This exemplifies the problems associated with trying to pick a value of "n" to use in hydraulic computations for alluvial river systems. During 1973 and 1974, values of "n" were much higher than in previous years, and this was probably due in part to the large sand waves that developed in the channel during the high flows. Values of "n" for overbank flow were not investigated in this report.

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Appendix A: Tables

Table 1

Highest Discharges of Record on the Mississippi River at Vicksburg, Mississippi 1897 to 1975

Rank According to Flow	Year	Discharge (cfs)	Canal Gage* 0=46.25' msl	Rank According to Stage	Days Overbank
1	1927	2,278,000 est.	58.4	1	185
2	1937	2,060,000	55.5	2	43
3	1973	1,962,000	53.5	6	89
4	1945	1,922,000	49.8	15	47
5	1950	1,876,000	47.7	23	29
6	1975	1,832,000	49.9	14	32
7	1913	1,783,000	52.2	8	42
8	1912	1,780,000	51.7	11	72
9	1897	1,777,000	52.5	7	75
10	1922	1,752,000	54.9	4	70
11	1929	1,741,000	55.1	3	106
12	1916	1,735,000	53.9	5	90
13	1907	1,721,000	49.7	16	73
14	1943	1,671,000	45.8	28	9
15	1920	1,649,000**	50.9	12	78
16	1944	1,609,000	45.6	30	3
17	1903	1,606,000**	51.8	10	82
18	1961	1,578,000	47.3	24	12

* These are peak gage readings in feet mean sea level (msl) and are not necessarily coincident with the peak discharge.

** May have been exceeded during period of no record.

Table 2

Values of Exponents in the Equations for the at-a-Station Channel Characteristics:

$W = aQ^b$, $\bar{D} = cQ^f$, $\bar{V} = kQ^m$, $Q_s = pQ^j$, $Q_{sf} = tQ^x$, $C_T = rQ^y$, $C_s = nQ^z$

Location and Water Year	b	f	m	j	x	y	z
Arkansas City (mile 565.9)							
1929	0.061	0.498	0.440	0.965*		0.006*	
1933	0.197	0.329	0.474				
1950	0.119	0.345	0.536				
1967	0.060	0.360	0.580				
1968	0.122	0.298	0.580	1.493	1.175	0.492	1.768
1969	0.160	0.236	0.595	1.780	1.476	0.780	1.606
1970	0.187	0.228	0.583	1.796	1.438	0.798	1.927
1971	0.186	0.289	0.518	1.948	1.565	0.949	1.550
1972	0.192	0.300	0.516	1.725	1.453	0.725	1.346
1973	0.261	0.163	0.576	1.366	1.086	---	1.230
1974	0.334	0.051	0.615	1.872	1.517	0.872	1.595
Vicksburg (mile 435.41)							
1929-31				1.209		0.210	
1943	0.247	0.222	0.531				
1950	0.074	0.352	0.573				
1968	0.325	0.127	0.548	1.566	1.275	0.567	1.506
1969	0.314	0.168	0.518	2.417	2.108	1.415	2.334
1970	0.324	0.162	0.514	2.047	1.872	1.047	1.559
1971	0.339	0.157	0.499	1.912	1.653	0.910	1.503
1972	0.354	0.117	0.529	1.930	1.662	0.929	1.565
1973	0.290	0.154	0.556	1.275	0.888	---	1.109
1974	0.254	0.208	0.538	1.754	1.334	0.753	1.512
Natchez (mile 362.34)							
1970	0.056	0.385	0.559				
1971	0.051	0.377	0.571				
1972	0.064	0.392	0.544	1.462	1.120	0.462	1.159
1973	0.036	0.319	0.645	1.123	0.698	---	1.150
1974	0.048	0.355	0.596	1.258	0.886	---	1.270

Note: W = width of flow.
Q = water discharge.
$\bar{D}$ = average depth.
$\bar{V}$ = average velocity
Q_s = suspended sediment discharge.
Q_{sf} = suspended fines discharge (<0.062 mm).
C_T = total suspended concentration.
C_s = concentration of suspended sands.

a,b,c,f,k,m,p,j,t,x,r,y,n, and z = constants for a particular cross section.

* For 1929-1931.

Table 2A

Comparison of Average Values of Exponents in the Equations for the at-a-Station Channel Characteristics with Those from Previous Studies:

$W = aQ^b, \quad \bar{D} = cQ^f, \quad \bar{V} = kQ^m$

Location	Reference	b	f	m
Great Plains and Southwest	(11)	0.26	0.40	0.34
Middle Mississippi River St. Louis, Mo.	(12)	0.07	0.43	0.50
Lower Mississippi River				
Arkansas City, Ark.		0.17	0.28	0.55
Vicksburg, Miss.		0.28	0.19	0.53
Natchez, Miss.		0.05	0.37	0.58
10 stations on the Big Black River, Miss.	(13)	0.05	0.17	0.78
Ephemeral streams in semiarid U.S.	(14)	0.29	0.36	0.34
158 gaging stations in U.S.	(14)	0.12	0.45	0.43
Scioto River, Ohio	(15)	0.00	0.30	0.70
Various Tenn. Valley	(15)	0.06	0.48	0.46
Codorous Creek, Penn.	(15)	0.00	0.40	0.60
Brandywine Creek, Penn.	(16)	0.04	0.41	0.55

Note: W = width of flow.
Q = water discharge.
$\bar{D}$ = average depth.
$\bar{V}$ = average velocity.

Table 3

Summary of Suspended Sediment Measurements, Mississippi River, for Arkansas City Discharge Range, Mile 565.9 AHP,* 2 April 1929-23 December 1974

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield** (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines**	Concentration (ppm): Total	Ratio of Fines/Total
1929												
April	2	1,400	5.95	63.9	3,680	0.909			1,676		444	
	5	1,394	6.04	62.7	3,680				1,541		410	
	8	1,367	5.78	64.2	3,680				1,390		377	
	11	1,384	5.79	64.8	3,680				1,597		428	
	15	1,443	5.96	65.7	3,687	0.928			2,062		530	
	18	1,449	5.96	66.0	3,690				1,896		485	
	22	1,497	6.05	67.1	3,690				2,450		607	
	25	1,551	6.38	66.0	3,690	0.795			2,016		482	
May	3	1,358	5.62	65.6	3,680	1.04			2,498		682	
	6	1,279	5.25	66.1	3,680	0.833			1,952		566	
	9	1,384	5.75	65.4	3,680				1,706		457	
	13	1,343	5.57	65.4	3,680	0.890			1,474		407	
	16	1,431	5.88	66.0	3,680				1,231		319	
	20	1,619	6.34	69.3	3,690	1.21			1,140		261	
	23	1,627	6.26	70.4	3,690				1,220		278	
	27	1,757	6.73	70.8	3,690	1.21			1,535		324	
	30	1,712	6.43	72.1	3,690				1,376		298	
June	3	1,632	6.18	71.6	3,690	1.04			845		192	
	6	1,552	5.95	70.6	3,690				720		172	
	10	1,474	5.73	69.8	3,690	1.10			771		194	

(Continued)

* AHP--above head of passes, miles.
** Fines--material finer than 0.062 mm.

Table 3 (Continued)

Date			Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of $\frac{Fines}{Total}$
1929													
June	13		1,323	5.39	63.7	3,680				1,834		514	
	17		1,283	5.29	66.0	3,680	1.08			1,886		545	
	20		1,185	5.06	63.7	3,670				1,940		607	
	24		977	4.55	58.5	3,670	0.928			2,477		941	
	25		925	4.35	58.0	3,660				2,629		1,055	
April - June 1929		Avg.	1,414	5.77	66.1	3,683				1,674		463	
		Max.	1,757	6.73	72.1	3,690				2,629		1,055	
		Min.	925	4.35	58.0	3,660				720		172	
1930													
September	2		124	1.81	23.3	2,960	0.587			54		160	
	3		126	1.91	22.3	2,960				63		186	
	6		123	1.81	23.2	2,940	0.549			41		122	
	8		123	1.83	22.9	2,940	0.549			39		116	
	12		121	1.85	22.2	2,940	0.511			57		174	
	16		135	1.94	23.6	2,960	0.568			91		249	
	17		139	1.93	24.2	2,960	0.549			109		290	
	20		135	1.82	24.9	3,000	0.492			110		301	
	22		175	2.17	26.7	3,020	0.549			154		328	
	25		189							257		503	
	29		169							193		424	

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1930												
October	3	145							156		398	
	6	131							148		419	
	11	123	1.79	23.5	2,940	0.530			128		384	
	15	145							136		347	
	16	143							130		337	
	20	137							101		272	
	21	134							97		269	
	24	144							771		1,983	
	25	134							959		2,650	
	29	125	1.82	23.4	2,940	0.549			580		1,719	
	30	134	1.98	23.0	2,940	0.663			579		1,600	
	31	135							551		1,511	
November	1	136							483		1,317	
	3	134							387		1,070	
	4	132							305		855	
	5	131							263		743	
	6	128							237		685	
	7	125							226		670	
	8	123							221		666	
	11	118							183		574	

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1930												
November	12	118							143		449	
	14	117							140		442	
	15	117							134		423	
	17	111	1.69	22.5	2,900				135		450	
	18	117	1.76	22.8	2,900	0.549			156		495	
	19	120							154		475	
	20	118							146		458	
	21	120							147		455	
	22	124							153		456	
	24	128							135		390	
	25	132							168		471	
	26	138							171		458	
	28	149							167		415	
December	1	150							141		349	
	2	151							144		354	
	3	151							202		496	
	4	156							209		497	
	5	158							280		657	
	6	171							305		660	
	8	175							238		509	

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment				
								Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm)		Ratio of $\frac{\text{Fines}}{\text{Total}}$
										Fines	Total	
1930												
December	9	190							674		1,314	
	11	218							739		1,255	
	12	217							766		1,308	
	15	197							333		617	
	16	196							330		623	
	17	199							268		499	
	22	185							176		352	
	23	177							168		352	
	24	169							135		295	
	26	155							90		247	
	27	150							114		282	
	29	143							934		242	
	30	140							911		241	
	31	135							867		237	
1931												
January	2	136							79		216	
	3	137							86		222	
	5	134							72		198	
	6	132							74		208	
	7	131							71		202	

(Continued)

Table 3 (Continued)

Date			Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of $\frac{\text{Fines}}{\text{Total}}$
1931													
January	8		132							63		178	
	9		134							64		176	
	10		136							73		200	
	12		141							78		204	
	15		161							103		236	
	16		168							102		224	
		Avg.	144							245		537	
Sep 1930 - Jan 1931		Max.	218							959		2,650	
		Min.	111							39		116	
1967													
April	28		638	4.43	41.1	3,480	0.512	62	585	727	340	423	0.80
July	17		715	4.77	42.9	3,500	0.538	77	565	717	293	372	0.79
August	28		281	2.81	30.7	3,260	0.819	78	123	167	163	221	0.74
September	5		263	2.72	30.0	3,230	0.846	73	83	91	117	128	0.91
		Avg.	474	3.68	36.2	3,367	0.679	72	339	425	228	286	0.81
Apr - Sep 1967		Max.	715	4.77	42.9	3,500	0.846	78	585	727	340	423	0.91
		Min.	263	2.72	30.0	3,230	0.512	62	83	91	117	128	0.74

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1967												
November	6	361	3.25	33.1	3,350	0.759	56	239	311	246	320	0.77
1968												
February	12	984	5.69	48.7	3,550	0.570	42	674	1,117	254	421	0.60
March	15	334	2.98	34.1	3,280	0.783	47	329	367	365	408	0.89
	29	1,049	5.93	49.7	3,360	0.599	50	809	1,320	286	467	0.61
April	22	853	5.33	45.5	3,520	0.563	60	324	586	141	255	0.55
June	3	972	5.65	48.2	3,570	0.602	71	933	1,357	356	518	0.69
	13	1,051	5.74	41.3	4,430	0.579	74	402	739	142	261	0.54
July	15	408	3.40	34.9	3,440	0.822	81	233	246	212	224	0.95
September	6	196	2.25	27.6	3,160	0.822	78	54	57	103	108	0.95
Water Year 1967 - 68	Avg.	690	4.47	40.3	3,518	0.678	62	444	678	234	331	0.73
	Max.	1,051	5.93	49.7	4,430	0.822	81	933	1,357	365	518	0.95
	Min.	196	2.25	27.6	3,160	0.563	42	54	57	103	108	0.54
October	28	300	2.88	32.0	3,250	0.782	65	125	141	154	174	0.89
November	18	328	3.01	33.0	3,300	0.721	52	95	116	108	131	0.82
December	20	403	3.42	35.1	3,360	0.719	43	144	201	133	185	0.72

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1969												
January	20	419	3.49	34.8	3,450	0.708	38	191	277	169	245	0.69
February	27	886	5.18	48.3	3,540	0.502	43	380	688	159	288	0.55
March	12	638	4.17	44.0	3,480	0.620	44	291	502	169	292	0.58
April	30	1,163	6.06	43.2	4,440	0.588	60	727	1,197	232	382	0.61
August	8	488	3.67	37.7	3,450	0.766	82	230	295	175	224	0.78
September	5	247	2.35	33.2	3,160	0.873	80	53	61	79	92	0.86
Water Year 1968 - 69	Avg.	541	3.80	37.9	3,492	0.698	56	248	386	153	224	0.72
	Max.	1,163	6.06	48.3	4,440	0.873	82	727	1,197	232	382	0.89
	Min.	247	2.35	32.0	3,160	0.502	38	53	61	79	92	0.55
October	2	250	2.40	32.6	3,190	0.867	71	71	82	105	121	0.87
November	7	301	2.71	34.6	3,210	0.837	54	84	119	103	147	0.70
1970												
February	13	714	4.70	43.4	3,500	0.656	37	481	1,022	250	531	0.47
March	9	632	4.30	42.1	3,490	0.671	48	440	666	258	391	0.66
	27	681	4.45	43.7	3,500	0.663	45	209	384	114	209	0.55
May	20	1,114	5.51	45.4	4,450	0.444	70	504	904	168	301	0.56
June	5	612	4.08	42.9	3,500	0.772	72	313	464	190	281	0.68

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1970												
June	15	730	4.56	4[illegible].2	3,540	0.709	73	791	1,070	402	544	0.74
July	13	324	2.75	36.9	3,200	1.00	80	123	140	141	160	0.88
August	21	309	2.81	34.4	3,200	0.922	81	176	188	211	226	0.93
September	11	249	2.39	32.7	3,180	1.03	80	89	97	132	144	0.92
Water Year 1969 - 70	Avg.	538	3.70	39.4	3,451	0.779	65	298	467	188	278	0.72
	Max.	1,114	5.51	45.4	4,450	1.03	81	791	1,070	402	544	0.93
	Min.	249	2.39	32.6	3,180	0.444	37	71	82	103	121	0.47
October	8	494	3.63	39.8	3,420	0.796	68	336	441	252	331	0.76
November	6	522	3.84	40.6	3,350	0.848	57	246	393	175	279	0.63
December	7	357	3.05	36.0	3,250	0.890	49	91	131	95	136	0.70
1971												
January	18	702	4.62	43.3	3,510		40	365	935	193	494	0.39
February	25	884	5.23	47.6	3,546	0.681	41	732	1,327	307	557	0.55
March	22	1,005	5.74	49.0	3,570	0.526	48	485	1,027	179	379	0.47
April	23	443	3.60	35.6	3,460	0.920	60	116	185	97	155	0.63
May	17	653	4.87	39.0	3,440	0.754	64	454	692	258	393	0.66

(Continued)

Table 3 (Continued)

Date			Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1971													
July	2		366	3.33	33.7	3,260	0.930	82	295	414	299	420	0.71
August	13		412	3.65	34.5	3,280		80	155	204	140	184	0.76
September	20		252	2.83	29.8	2,990		77	71	94	104	138	0.75
Water Year 1970 - 71		Avg.	554	4.03	39.0	3,371		61	304	531	191	315	0.64
		Max.	1,005	5.74	49.0	3,570		82	732	1,327	307	557	0.76
		Min.	252	2.83	29.8	2,990		40	71	94	95	136	0.39
October	22		222	2.65	28.4	2,950	1.05	69	43	64	72	107	0.67
November	15		312	3.15	32.4	3,060	0.786	57	79	138	94	164	0.57
1972													
January	3		516	4.16	36.3	3,420	0.729	48	184	452	132	325	0.41
February	11		565	4.19	39.7	3,400	0.734	40	216	425	142	279	0.51
March	21		871	5.12	47.5	3,580	0.607	50	364	622	155	265	0.58
April	17		677	4.42	43.6	3,510	0.701	57	290	540	159	296	0.54
May	1		1,096	5.80	43.2	4,370	0.603	61	641	1,126	217	381	0.57
	8		1,239	6.20	44.5	4,490	0.594	62	461	989	138	296	0.47
	15		1,090	5.65	43.2	4,470	0.592	64	438	729	149	248	0.60
	22		923	4.88	42.8	4,420	0.602	66	498	739	200	297	0.67
	30		601	4.30	41.5	3,520	0.767	68	228	318	141	196	0.72

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1972												
June	5	431	3.39	38.1	3,330	1.02	72	128	171	110	147	0.75
	12	353	3.02	35.6	3,290	1.11	78	142	167	149	176	0.85
	19	319	2.90	34.8	3,160	1.16	78	89	107	103	124	0.83
	26	392	3.27	35.6	3,370	1.02	78	151	184	143	174	0.82
July	3	444	3.73	36.4	3,460	0.790	79	233	287	195	240	0.81
	10	567	4.14	39.1	3,500	0.607	79	296	407	194	266	0.73
	17	411	3.45	35.3	3,370	0.971	79	115	150	104	135	0.77
	24	405	3.46	34.7	3,370	0.974	82	128	156	117	143	0.82
	31	362	3.29	32.8	3,350	0.979	82	81	118	83	121	0.69
August	7	400	3.42	34.7	3,370	0.966	82	158	187	147	173	0.85
	14	441	3.71	35.3	3,374	0.900	80	197	245	166	206	0.81
	21	383	3.42	33.4	3,350	0.976	82	159	183	154	177	0.87
	28	384	3.46	33.4	3,350	0.965	82	100	122	97	118	0.82
September	5	294	3.13	32.0	3,080	1.06	79	59	78	74	98	0.76
	11	276	2.94	32.5	3,010	1.06	79	61	73	82	98	0.84
	18	284	2.96	31.4	3,050	1.05	78	69	80	90	105	0.86
	25	370	3.46	32.6	3,280	0.958	77	234	281	235	282	0.83
Water Year 1971 - 72	Avg.	522	3.85	36.8	3,473	0.869	71	209	326	137	201	0.72
	Max.	1,239	6.20	47.5	4,490	1.16	82	641	1,126	235	381	0.87
	Min.	222	2.65	28.4	2,950	0.592	40	43	64	72	98	0.41

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1972												
October	2	339	3.23	32.2	3,260	0.955	72	253	281	277	308	0.90
	10	415	3.68	33.7	3,350	0.888	70	166	240	148	215	0.69
	16	398	3.59	33.4	3,320	0.888	68	115	183	107	171	0.63
	24	348	3.28	32.6	3,250	0.958	60	91	139	97	148	0.66
November	3	498	4.22	33.9	3,480	0.891	59	485	626	361	466	0.77
	6	574	4.56	35.9	3,510	0.729	58	360	636	233	411	0.57
	15	821	5.47	42.0	3,570	0.648	54	412	686	186	310	0.60
	24	1,014	5.93	47.6	3,590	0.586	47	760	1,186	278	434	0.64
	27	965	5.88	45.7	3,590	0.632	46	544	923	209	355	0.59
December	5	853	5.65	42.1	3,590	0.587	46	255	531	111	231	0.48
	13	920	5.75	44.7	3,580	0.599	42	387	652	156	263	0.59
	18	1,081	6.18	40.1	4,370	0.571	40	533	1,125	183	386	0.47
	26	1,238	6.88	40.5	4,440	0.534	40	347	884	104	265	0.39
1973												
January	2	1,198	6.62	40.8	4,440	0.552	41	329	814	102	252	0.40
	12	1,141	6.23	41.2	4,440	0.555	37	830	1,442	270	469	0.58
	15	1,051	5.77	41.1	4,430	0.520	37	473	853	167	301	0.55
	22	689	4.62	42.0	3,550	0.671	42	288	472	155	254	0.61
	29	994	5.46	41.1	4,430	0.592	40	1,007	1,329	376	496	0.76

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of $\frac{\text{Fines}}{\text{Total}}$
1973												
February	5	1,079	5.68	42.9	4,430	0.518	42	439	832	151	286	0.53
	12	1,125	5.86	43.2	4,440	0.525	40	1,319	1,762	435	581	0.75
	20	1,130	5.85	43.3	4,460	0.563	40	469	902	154	296	0.52
March	2	662	4.30	43.5	3,540	0.660	44	236	369	132	207	0.64
	5	597	4.09	41.4	3,530	0.751	46	188	328	117	204	0.57
	12	870	5.18	46.8	3,590	0.692	51	893	1,196	381	510	0.75
	30	1,684	7.65	48.9	4,500	0.498	54	776	1,189	171	262	0.65
April	2	1,751	7.48	52.0	4,500	0.493	55	665	1,152	141	244	0.58
	9	1,787	7.26	54.8	4,490	0.504	54	641	1,074	133	223	0.60
	16	1,694	6.91	54.4	4,500	0.534	53	703	1,237	154	271	0.57
	30	1,818	6.97	57.7	4,520	0.539	60	662	1,343	135	274	0.49
May	8	1,773	6.52	50.7	5,360	0.547	63	640	1,171	134	245	0.55
	14	1,789	6.53	51.0	5,370	0.538	65	545	1,022	113	212	0.53
	23	1,653	6.38	57.3	4,520	0.539	66	450	744	101	167	0.60
	28	1,471	6.03	54.1	4,510	0.578	68	373	646	94	163	0.58
June	4	1,204	5.47	49.0	4,490	0.644	70	461	733	142	226	0.63
	12	1,173	5.41	48.3	4,490	0.677	73	443	680	140	215	0.65
	18	1,092	5.18	47.2	4,470	0.684	77	386	624	131	212	0.62
	25	877	4.59	43.2	4,420	0.799	79	499	608	211	257	0.87
July	3	692	4.17	46.6	3,560	0.888	79	369	416	198	223	0.89

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1973												
July	9	582	3.66	45.0	3,530	0.955	80	268	304	171	194	0.88
	17	489	3.30	42.3	3,500	1.01	81	273	294	207	223	0.93
	23	400	2.88	41.4	3,360	1.08	82	155	167	144	155	0.93
August	3	608	3.87	44.9	3,500	0.891	81	667	716	407	437	0.93
	6	507	3.43	42.5	3,480	0.937	80	320	347	234	254	0.92
	13	339	2.63	44.9	2,870	1.05	81	113	122	124	134	0.93
	20	408	3.02	45.8	2,950	1.03	81	126	143	115	130	0.88
	27	353	2.87	44.4	2,770	1.04	81	168	178	177	187	0.95
September	10	307	2.52	43.3	2,820	0.431	80	61	70	74	84	0.88
	17	269	2.26	42.5	2,800	1.13	77	45	51	62	71	0.87
	24	240	2.03	42.3	2,790	1.12	74	50	56	78	86	0.91
Water Year 1972 - 73	Avg.	918	4.96	44.2	3,883	0.718	60	429	683	177	265	0.68
	Max.	1,818	7.65	57.7	5,370	1.13	82	1,319	1,762	435	581	0.95
	Min.	240	2.03	32.2	2,770	0.43	37	45	51	62	71	0.39
October	2	300	2.48	42.8	2,830	1.11	74	77	86	95	106	0.90
	9	569	3.82	42.8	3,480	0.974	72	761	851	496	555	0.89
	15	576	3.86	42.9	3,480	0.947	70	503	554	324	357	0.91
	23	608	4.00	43.5	3,490	0.942	67	800	898	488	548	0.89
	29	541	3.68	42.3	3,470	0.941	64	478	550	328	377	0.87

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1973												
November	5	474	3.46	39.8	3,440	0.974	60	317	381	248	298	0.83
	14	412	3.17	45.0	2,890	0.955	55	120	152	108	137	0.79
	19	347	2.81	43.2	2,860	0.968	55	99	116	106	124	0.85
December	7	1,176	5.97	44.4	4,440	0.746	52	1,322	2,124	417	670	0.62
	11	1,199	5.91	45.4	4,470	0.669	49	905	1,839	280	569	0.49
	17	1,160	5.80	45.0	4,440	0.668	44	722	1,313	231	420	0.55
1974												
January	7	1,131	5.92	43.3	4,410	0.666	38	570	1,479	187	485	0.39
	21	1,304	6.65	43.9	4,460	0.647	44	552	1,504	157	428	0.37
	28	1,340	6.63	45.0	4,490	0.624	46	683	1,680	189	465	0.41
February	4	1,427	6.80	46.7	4,500	0.616	47	781	1,650	203	429	0.47
	11	1,475	7.11	46.2	4,500	0.612	43	692	1,757	174	442	0.39
	19	1,156	5.88	44.0	4,470	0.632	45	380	888	122	285	0.43
March	1	1,050	5.47	43.5	4,420	0.629	45	594	965	210	341	0.62
	9	852	4.81	49.4	3,590	0.599	52	278	489	121	213	0.57
	15	982	5.38	50.8	3,600	0.658	54	490	741	185	280	0.66
	18	1,044	5.45	43.3	4,430	0.653	54	492	794	175	282	0.62

(Continued)

Table 3 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1974												
April	5	1,016	5.41	42.4	4,430	0.634	53	288	553	105	202	0.52
	8	954	5.20	51.0	3,600	0.644	53	360	566	140	220	0.64
	15	1,013	5.26	43.6	4,420	0.639	55	440	781	161	286	0.56
	26	1,025	5.26	43.9	4,430	0.631	58	481	738	174	267	0.65
	29	942	5.14	50.9	3,610	0.647	63	434	614	171	242	0.71
May	6	801	4.65	48.1	3,580	0.676	66	538	667	249	309	0.81
	13	725	4.48	52.0	3,110	0.847	66	379	520	194	266	0.73
	20	728	4.49	52.1	3,110	0.828	69	348	479	175	244	0.72
	28	943	5.28	49.7	3,600	0.677	71	1,505	1,739	592	684	0.87
June	3	1,067	5.53	43.4	4,440	0.576	71	1,265	1,596	440	555	0.79
	10	1,195	5.77	46.4	4,470	0.697	71	1,018	1,047	316	325	0.97
	17	1,302	6.08	47.6	4,500	0.664	74	786	807	224	230	0.97
	24	1,109	5.45	45.5	4,470	0.567	74	717	945	240	316	0.76
July	1	845	4.65	50.8	3,580	0.642	74	485	617	213	271	0.79
	8	821	4.77	48.2	3,570	0.655	77	485	651	219	294	0.74
	15	616	4.03	49.9	3,060	0.623	82	367	480	221	289	0.76
	22	427	3.09	47.8	2,890	0.734	83	167	190	145	165	0.88
	29	354	2.76	45.2	2,840	0.803	84	142	155	149	162	0.92
August	5	306	2.56	42.5	2,820	0.788	80	45	56	54	68	0.79
	12	303	2.56	41.8	2,830	0.793	80	93	100	114	123	0.93

(Continued)

Table 3 (Continued)

Date			Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1974													
August	19		398	3.16	43.5	2,900	0.716	79	121	159	113	148	0.76
	26		334	2.76	42.5	2,850	0.687	81	68	78	76	87	0.87
September	6		474	3.59	45.2	2,920	0.664	75	216	259	169	202	0.84
	20		463	3.41	46.5	2,930	0.648	73	96	141	77	113	0.68
	23		450	3.40	45.3	2,920	0.639	70	113	131	93	108	0.86
	30		349	2.86	42.7	2,860	0.727	68	79	96	84	102	0.82
		Avg.	810	4.61	45.6	3,679	0.725	63	482	744	207	300	0.72
Water Year 1973 - 74		Max.	1,475	7.11	52.1	4,500	1.11	84	1,505	2,124	592	684	0.97
		Min.	300	2.48	39.8	2,820	0.567	38	45	56	54	68	0.37
October	7		299	2.46	42.9	2,840	0.717	64	61	74	76	92	0.83
	15		233	2.11	39.3	2,810	0.751	64	48	55	77	88	0.87
	21		251	2.14	41.4	2,840	0.722	62	44	56	65	83	0.78
November	1		260	2.26	40.6	2,830	0.732	64	105	123	150	175	0.86
	8		414	3.18	45.0	2,890	0.671	60	1,049	1,176	940	1,054	0.89
	11		555	3.80	49.5	2,950	0.719	58	1,032	1,306	690	873	0.79
	25		619	4.21	49.8	2,950	0.738	52	462	696	277	417	0.66
December	2		646	4.32	50.5	2,960	0.738	48	315	542	181	311	0.58
	9		564	3.90	49.1	2,950	0.727	44	88	438	58	288	0.20

(Continued)

Table 3 (Concluded)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of $\frac{\text{Fines}}{\text{Total}}$
1974												
December	16	618	4.05	51.4	2,970	0.737	43	218	373	131	224	0.58
	23	636	4.17	51.3	2,970	0.740	44	177	315	103	184	0.56
Oct - Dec 1974	Avg.	463	3.33	46.4	2,905	0.727	55	327	469	250	344	0.69
	Max.	646	4.32	51.4	2,970	0.751	64	1,049	1,306	940	1,054	0.89
	Min.	233	2.11	39.3	2,810	0.671	43	44	55	58	83	0.20

(Sheet 18 of 18)

Table 4

Summary of Suspended Sediment Measurements, Mississippi River, for Vicksburg Discharge Range, Mile 435.41 AHP,* 13 March 1929-23 December 1974

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield** (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines**	Concentration (ppm): Total	Ratio of Fines/Total
1929												
March	13	967	5.12	60.9	3,100				2,678		1,028	
	16	1,011	5.17	62.5	3,130				2,068		758	
	19	1,074	5.38	63.5	3,140				3,171		1,096	
	22	1,168	5.98	61.7	3,170				1,771		562	
	25	1,241	5.90	63.2	3,330				1,838		549	
	28	1,280	6.05	63.4	3,330				2,127		616	
April	1	1,336	6.04	65.6	3,370				2,072		575	
	11	1,419	6.41	65.4	3,390				1,653		432	
	17	1,452	6.55	65.4	3,390				2,290		585	
	24	1,571	6.68	69.4	3,390				2,356		556	
May	1	1,535	6.81	66.5	3,390				2,207		533	
	8	1,462	6.81	63.4	3,390				2,063		523	
	15	1,433	6.43	65.8	3,390				1,539		398	
	24	1,587	6.93	67.6	3,390				1,610		376	
	31	1,669	7.35	66.9	3,390				2,098		466	
June	6	1,670	6.85	71.9	3,400				1,478		328	
Mar - Jun 1929	Avg.	1,367	6.28	65.2	3,318				2,064		586	
	Max.	1,670	7.35	71.9	3,400				3,171		1,096	
	Min.	967	5.12	60.9	3,100				1,478		328	

(Continued)

* AHP--above head of passes, miles.
** Fines--material finer than 0.062 mm.

(Sheet 1 of 17)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1930												
August	28	129	1.40	38.8	2,360				33		95	
September	4	132	1.44	38.8	2,360				30		84	
	5	137	1.50	38.6	2,360				28		77	
	9	135	1.47	39.0	2,350				25		68	
	10	132	1.44	39.2	2,350				27		75	
	13	137	1.49	39.1	2,350				33		89	
	15	146	1.59	38.9	2,360				41		104	
	18	138	1.50	39.1	2,360				66		176	
	23	164	1.71	39.4	2,430				115		260	
	27	184							148		297	
October	1	171							174		376	
	4	156							139		330	
	8	139							111		295	
	10	134							115		319	
	13	132							122		341	
	14	139							126		336	
	17	149							136		339	
	18	148							119		299	
	22	140							99		262	
	23	140							91		240	

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1930												
October	27	139							305		814	
	28	137							701		1,895	
	31	133							840		2,338	
November	3	139							599		1,595	
	7	134							415		1,148	
	8	132							331		930	
	11	127							211		616	
	12	126							185		545	
	13	125							182		538	
	14	129	1.43	39.0	2,320				200		573	
	15	124	1.36	39.2	2,320				198		592	
	17	127							169		493	
	19	127							131		383	
	24	147	1.61	39.1	2,340				179		451	
	25	132							155		435	
	26	134							146		403	
	27	137							149		403	
	28	139							145		386	
	29	143							156		403	
December	2	156							176		419	

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1930												
December	3	156							162		385	
	4	154							145		349	
	5	158							161		378	
	10	199	1.92	41.6	2,480				362		674	
	11	195							308		585	
	17	202							548		1,005	
	23	194							266		509	
	24	185							241		483	
	29	157							128		302	
	30	154							131		315	
1931												
January	2	143							96		249	
	5	145							82		210	
	7	147							95		239	
	8	145							89		227	
	9	145							81		208	
	16	164							88		198	
	19	182							121		246	
	21	190							118		230	
	23	182							117		239	
	26	171							94		204	

(Continued)

Table 4 (Continued)

Date			Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
Aug 1930 - Jan 1931		Avg.	149							180		451	
		Max.	202							840		2,338	
		Min.	124							25		68	
1968													
January	29		572	5.35	40.1	2,670		42	177	335	115	217	0.53
February	26		584	5.12	41.8	2,730		39	216	392	137	249	0.55
March	18		410	4.69	45.1	1,940		48	320	411	290	372	0.78
April	1		1,055	7.08	50.2	2,970		51	671	1,254	236	441	0.54
May	27		813	6.02	47.0	2,870		70	344	524	157	239	0.66
	31		826	6.16	46.7	2,870		71	492	681	221	306	0.72
July	22		404	4.07	41.3	2,400		82	174	205	160	188	0.85
September	13		206	2.65	42.2	1,840		71	63	70	114	126	0.90
Jan - Sep 1968		Avg.	609	5.14	44.3	2,536		59	307	484	179	267	0.69
		Max.	1,055	7.08	50.2	2,970		82	671	1,254	290	441	0.90
		Min.	206	2.65	40.1	1,840		39	63	70	114	126	0.53
October	25		294	3.53	41.5	2,010		54	106	122	134	154	0.87
December	16		557	4.93	43.1	2,620		43	245	458	163	305	0.53

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1969												
February	3	1,041	6.63	52.9	2,970		43	1,448	2,865	516	1,021	0.51
April	7	849	6.11	48.6	2,860		52	682	1,064	298	465	0.64
May	23	757	5.65	46.9	2,860		68	741	1,012	363	496	0.73
July	14	751	5.78	46.6	2,790		84	1,085	1,326	536	655	0.82
August	8	509	4.59	43.4	2,560		82	296	354	216	258	0.84
September	5	287	3.30	44.0	1,980		81	92	104	119	135	0.88
Water Year 1968 - 69	Avg.	631	5.07	45.9	2,581		63	587	913	293	436	0.73
	Max.	1,041	6.63	52.9	2,970		84	1,448	2,865	536	1,021	0.88
	Min.	287	3.30	41.5	1,980		43	92	104	119	135	0.51
October	10	249	3.10	42.7	1,880		72	81	95	120	142	0.85
	27	544	4.95	43.3	2,540		60	365	604	249	412	0.60
December	18	363	3.86	46.5	2,020		44	74	138	76	141	0.54
	29	385	4.07	46.2	2,050		44	153	223	147	215	0.68
1970												
February	9	594	5.17	46.0	2,500		39	434	714	271	446	0.61
March	6	647	5.18	45.8	2,730		45	413	616	237	353	0.67
April	6	727	5.59	46.9	2,770		52	417	647	213	330	0.65

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1970												
April	17	977	6.60	49.3	3,000		57	772	1,319	293	501	0.58
June	1	836	5.93	48.1	2,930		75	575	699	255	310	0.82
July	20	327	3.83	38.6	2,210		84	108	137	123	155	0.79
August	3	254	3.36	38.4	1,970		79	73	88	107	129	0.83
September	14	251	3.27	39.0	1,970		82	56	66	83	97	0.86
Water Year 1969 - 70	Avg.	513	4.58	44.2	2,381		61	293	446	181	269	0.71
	Max.	977	6.60	49.3	3,000		84	772	1,319	293	501	0.86
	Min.	249	3.10	38.4	1,880		39	56	66	76	97	0.54
October	2	541	5.10	41.4	2,560		74	513	671	352	460	0.77
	26	477	4.68	41.3	2,470		62	199	285	155	222	0.70
December	7	416	4.08	42.1	2,420		50	100	175	89	156	0.57
1971												
January	22	662	5.09	47.4	2,740		40	327	535	183	300	0.61
March	12	1,311	7.53	56.9	3,060		44	1,018	2,035	288	576	0.50
April	2	779	5.69	49.1	2,790		49	479	754	228	359	0.64
	23	525	5.05	44.4	2,340		60	181	267	128	189	0.68
May	28	716	5.68	45.2	2,790		70	434	612	225	317	0.71

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1971												
June	28	468	4.59	44.7	2,280		82	438	498	347	395	0.88
August	9	401	4.22	46.1	2,060		81	266	384	246	355	0.69
September	20	256	3.22	41.8	1,900		79	57	68	83	99	0.84
Water Year 1970 - 71	Avg.	596	4.99	45.5	2,492		63	365	571	211	312	0.69
	Max.	1,311	7.53	56.9	3,060		82	1,018	2,035	352	576	0.88
	Min.	256	3.22	41.3	1,900		40	57	68	83	99	0.50
October	8	293	3.56	42.6	1,930		74	82	103	104	131	0.79
November	5	299	3.53	43.8	1,930		64	76	159	94	197	0.48
	19	304	3.62	43.7	1,920		58	99	134	121	164	0.74
December	13	558	5.31	45.9	2,290		50	1,020	1,363	678	906	0.75
1972												
January	7	566	4.96	46.2	2,470		46	319	503	209	330	0.63
February	11	587	5.24	44.1	2,540		41	304	513	192	324	0.59
March	10	852	6.45	46.6	2,830		49	838	1,341	365	584	0.63
April	17	606	5.41	42.7	2,620		58	227	405	139	248	0.56
May	1	1,039	6.93	49.0	3,060		62	720	1,092	257	390	0.66

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1972												
May	8	1,147	6.91	54.2	3,060		62	541	1,484	175	480	0.36
	15	1,110	6.98	51.8	3,070		66	497	877	166	293	0.57
	22	966	6.40	49.7	3,040		69	641	914	246	351	0.70
	30	682	5.68	43.0	2,790		74	333	441	181	240	0.75
June	5	459	4.70	41.1	2,380		76	189	265	153	214	0.71
	12	373	4.22	40.9	2,160		79	134	178	133	177	0.75
	19	326	3.94	40.2	2,060		80	120	140	137	159	0.86
	26	412	4.53	41.6	2,190		80	153	214	138	193	0.72
July	3	449	4.84	41.1	2,260		80	232	289	192	239	0.80
	10	600	5.71	40.1	2,620		78	463	615	286	380	0.75
	17	453	4.87	40.5	2,300		80	134	190	110	156	0.71
	24	414	4.57	38.9	2,330		83	151	198	135	177	0.76
	31	405	4.37	41.9	2,210		85	106	145	97	133	0.73
August	7	420	4.57	40.9	2,250		84	195	246	172	217	0.79
	14	453	4.68	42.3	2,290		83	173	241	142	197	0.72
	21	416	4.50	41.1	2,250		84	206	239	184	213	0.86
	28	402	4.31	42.0	2,220		83	131	163	121	150	0.81
September	5	327	3.83	41.5	2,060		82	92	111	104	126	0.83
	11	314	3.71	43.0	1,970		81	70	85	83	101	0.82
	18	306	3.58	43.4	1,970		80	75	92	91	112	0.81

(Continued)

Table 4 (Continued)

Date			Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1972													
September	25		382	5.03	36.5	2,080		79	223	233	217	226	0.96
Water Year 1971 - 72		Avg.	531	4.90	43.3	2,372		72	285	432	184	260	0.72
		Max.	1,147	6.98	54.2	3,070		85	1,020	1,484	678	906	0.96
		Min.	293	3.53	36.5	1,920		41	70	85	83	101	0.36
October	2		389	4.35	42.6	2,100		75	288	338	275	322	0.85
	10		429	4.79	40.7	2,200		72	183	268	158	232	0.68
	16		435	4.72	41.5	2,220		71	157	238	134	203	0.66
	24		388	4.32	42.0	2,140		63	113	177	108	169	0.64
	30		430	4.59	42.4	2,210		60	109	245	94	211	0.45
November	6		604	5.35	44.7	2,530		60	596	915	366	562	0.65
	13		868	6.34	49.1	2,790		57	821	1,511	351	646	0.54
	20		918	6.56	49.0	2,860		51	564	1,136	228	459	0.50
	27		1,013	6.94	49.3	2,960		47	639	1,240	234	454	0.52
December	4		955	6.68	48.6	2,940		46	363	906	141	352	0.40
	18		1,100	7.53	48.5	3,010		41	578	1,450	195	489	0.40
	26		1,226	7.81	51.0	3,080		40	618	1,705	187	516	0.36
1973													
January	2		1,216	7.65	51.6	3,080		42	367	1,249	112	381	0.29

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1973												
January	8	1,217	7.65	51.6	3,080		41	430	1,292	131	394	0.33
	15	1,215	7.45	52.9	3,080		38	652	1,503	199	459	0.43
	22	883	6.09	49.7	2,920		43	376	662	158	278	0.57
	29	1,039	7.02	48.7	3,040		42	879	1,554	314	555	0.57
February	5	1,150	7.06	53.1	3,070		43	549	1,200	177	387	0.46
	12	1,173	7.15	53.2	3,080		42	648	1,325	205	419	0.49
	20	1,221	7.14	55.3	3,090		41	602	1,478	183	449	0.41
	26	1,113	6.70	53.9	3,080		42	408	954	136	318	0.43
March	5	747	5.41	49.8	2,770		48	336	511	167	254	0.66
	12	853	5.84	50.9	2,870		54	623	835	271	363	0.75
	19	1,234	7.22	55.2	3,100		55	1,101	1,799	331	541	0.61
	26	1,432	7.70	58.7	3,170		54	892	1,675	231	434	0.53
April	2	1,740	8.57	62.3	3,260		56	844	2,504	180	534	0.34
	9	1,762	8.55	62.4	3,300		55	788	2,066	166	435	0.38
	18	1,776	8.54	63.0	3,300		56	680	1,728	142	361	0.39
	21	1,763	8.64	61.8	3,300		59	527	1,407	111	296	0.38
	23	1,724	8.58	60.9	3,300		59	502	1,269	108	273	0.40
	28	1,808	8.91	61.5	3,300		61	507	1,291	104	265	0.39
	30	1,820	8.83	62.4	3,300		61	535	1,241	109	253	0.43
May	2	1,859	9.02	62.4	3,300		64	551	656	110	131	0.84

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1973												
May	7	1,869	9.12	62.1	3,300		65	655	1,436	130	285	0.46
	9	1,887	9.03	63.3	3,300		65	549	595	108	117	0.44
	14	1,881	8.71	65.5	3,300		66	629	1,252	124	247	0.50
	16	1,887	8.70	65.8	3,300		66	544	1,358	107	267	0.40
	21	1,802	8.42	64.8	3,300		68	423	1,005	87	207	0.42
	23	1,814	8.52	64.5	3,300		69	406	1,002	83	205	0.40
	28	1,616	8.37	58.5	3,300		70	301	344	69	79	0.87
	30	1,580	8.45	56.7	3,300		70	349	733	82	172	0.48
June	4	1,405	7.55	57.1	3,260		73	413	659	109	174	0.63
	6	1,362	7.52	55.7	3,250		74	367	609	100	166	0.60
	11	1,354	7.48	55.9	3,240		75	445	741	122	203	0.60
	13	1,330	7.39	55.6	3,240		76	445	667	124	186	0.67
	18	1,270	7.06	56.3	3,200		79	366	575	107	168	0.64
	20	1,211	6.84	55.7	3,180		80	375	552	115	169	0.68
	25	1,039	6.26	53.5	3,100		81	364	462	130	165	0.79
	27	984	6.04	52.6	3,100		82	366	454	138	171	0.81
July	2	861	5.66	53.5	2,840		82	485	545	209	235	0.89
	5	792	5.39	52.3	2,810		82	416	470	195	220	0.89
	9	693	4.99	50.0	2,780		82	409	456	219	244	0.90
	11	624	4.69	48.2	2,760		82	336	378	200	225	0.89

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1973												
July	16	584	4.63	46.5	2,710		83	231	268	147	170	0.86
	18	542	4.44	47.5	2,570		83	250	283	171	194	0.88
	23	469	4.04	47.0	2,470		84	291	314	230	248	0.93
	25	441	3.94	46.3	2,420		85	215	234	181	197	0.92
	30	536	4.47	47.6	2,520		86	264	316	183	219	0.84
August	6	606	4.63	48.2	2,720		82	541	583	331	357	0.93
	13	399	3.73	45.5	2,350		84	149	165	139	153	0.91
	20	436	3.96	46.8	2,350		83	142	167	121	142	0.85
	27	424	3.93	45.2	2,390		81	192	210	168	184	0.91
September	4	339	3.42	44.2	2,240		79	87	97	95	106	0.90
	10	336	3.36	45.9	2,180		80	75	88	83	97	0.86
	17	322	3.23	46.2	2,160		78	71	81	82	93	0.88
	24	299	3.04	47.4	2,070		75	81	88	100	109	0.92
Water Year 1972 - 73	Avg.	1,068	6.47	52.8	2,896		65	440	841	162	281	0.63
	Max.	1,887	9.12	65.8	3,300		86	1,101	2,504	366	646	0.93
	Min.	299	3.04	40.7	2,070		38	71	81	69	79	0.29
October	1	312	3.19	46.3	2,110		75	93	103	110	123	0.89
	9	555	4.70	47.0	2,510		73	657	754	439	504	0.87
	15	609	4.80	47.0	2,700		70	658	773	401	471	0.85

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of $\frac{\text{Fines}}{\text{Total}}$
	1973											
October	23	611	4.81	47.4	2,680		67	568	677	345	411	0.84
	29	583	4.86	44.8	2,680		66	558	677	355	431	0.82
November	5	501	4.47	45.7	2,450		61	316	381	234	282	0.83
	12	517	4.34	48.0	2,480		57	209	273	150	196	0.77
	19	422	3.94	45.9	2,330		56	125	159	110	140	0.79
	26	460	4.18	46.4	2,370		60	187	245	151	198	0.76
December	3	1,020	6.54	55.1	2,830		56	1,116	1,471	406	535	0.76
	10	1,233	6.97	57.3	3,090		50	1,130	2,729	340	821	0.41
	17	1,257	6.98	57.9	3,110		46	908	1,894	268	559	0.48
	26	813	5.38	54.9	2,750		43	388	686	177	313	0.57
	1974											
January	7	1,112	6.43	58.4	2,960		39	665	1,439	222	480	0.46
	15	1,280	6.74	61.3	3,100		37	600	1,459	174	423	0.41
	21	1,258	6.52	61.5	3,140		42	427	451	126	133	0.95
February	4	1,437	7.52	60.1	3,180		46	620	1,495	160	386	0.41
	19	1,377	7.25	60.1	3,160		48	471	1,284	127	346	0.37
	25	1,076	6.18	56.3	3,090		46	522	1,267	180	437	0.41
March	8	1,044	6.25	54.6	3,060		54	470	898	167	319	0.52

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1974												
March	22	1,147	6.95	53.6	3,080		54	541	1,002	175	324	0.54
	29	1,229	7.15	55.5	3,100		51	444	1,332	134	402	0.33
April	5	1,101	6.59	54.0	3,090		56	329	733	111	247	0.45
	12	1,002	6.26	56.1	2,850		57	448	772	166	286	0.58
	15	1,015	6.30	55.5	2,900		58	506	1,135	185	415	0.45
	22	1,081	6.67	55.9	2,900		60	481	994	165	341	0.48
	29	1,032	6.41	55.5	2,900		65	517	1,021	186	367	0.51
May	6	870	5.88	52.7	2,810		67	603	811	257	346	0.74
	13	753	5.54	49.1	2,770		68	398	593	196	292	0.67
	20	722	5.51	47.6	2,750		72	395	508	203	261	0.78
	28	939	6.30	52.7	2,830		73	731	1,012	289	400	0.72
June	3	1,021	6.46	54.5	2,900		73	1,200	1,522	436	553	0.79
	10	1,154	6.83	54.7	3,090		74	958	1,306	308	420	0.73
	17	1,350	7.16	60.8	3,100		75	728	1,248	200	343	0.58
	28	1,118	6.32	57.3	3,090		76	684	928	227	308	0.74
July	1	1,005	5.88	59.0	2,900		76	615	864	227	319	0.71
	8	909	5.79	55.9	2,810		78	757	907	309	370	0.84
	15	717	5.05	51.4	2,760		82	404	539	209	279	0.75
	22	487	4.12	48.8	2,420		86	251	306	191	233	0.82
	29	405	3.68	47.2	2,330		84	177	212	162	194	0.84

(Continued)

Table 4 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1974												
August	5	351	3.38	45.8	2,270		83	105	140	111	148	0.75
	16	353	3.46	45.1	2,260		83	75	93	79	98	0.81
	19	415	3.88	45.7	2,340		81	139	164	124	147	0.84
	30	346	3.43	44.5	2,270		82	80	96	86	103	0.83
September	3	367	3.56	45.4	2,270		77	134	157	135	159	0.85
	9	532	4.47	48.8	2,440		83	274	369	191	257	0.74
	16	562	4.57	48.6	2,530		76	238	367	157	242	0.65
	30	385	3.70	43.9	2,370		69	108	142	104	137	0.76
Water Year 1973 - 74	Avg.	830	5.49	52.1	2,748		65	479	780	208	323	0.68
	Max.	1,437	7.52	61.5	3,180		86	1,200	2,729	439	821	0.95
	Min.	312	3.19	43.9	2,110		37	75	93	79	98	0.33
October	7	350	3.50	44.1	2,270		67	75	100	80	106	0.75
	15	295	3.14	43.4	2,160		67	87	107	109	134	0.81
	21	298	3.20	43.1	2,160		64	82	105	102	131	0.78
	29	313	3.32	43.3	2,180		64	63	100	75	119	0.63
November	11	509	4.46	47.1	2,420		61	805	943	587	687	0.85
	25	636	4.89	51.0	2,550		54	411	715	240	417	0.58
December	2	670	5.00	50.8	2,640		49	522	921	289	510	0.57

(Continued)

Table 4 (Concluded)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1974												
December	9	575	4.53	50.6	2,510		47	214	488	138	315	0.44
	16	647	4.94	50.6	2,590		46	242	553	139	317	0.44
	23	673	4.99	51.7	2,610		45	194	510	107	281	0.38
Oct 1974 - Dec 1974	Avg.	497	4.20	47.6	2,409		56	270	454	187	302	0.62
	Max.	673	5.00	51.7	2,640		67	805	943	587	687	0.85
	Min.	295	3.14	43.1	2,160		45	63	100	75	106	0.38

Table 5

Summary of Suspended Sediment Measurements, Mississippi River, for Natchez Discharge Range, Mile 362.34 AHP,* 29 April 1970-26 December 1974

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield** (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines**	Concentration (ppm): Total	Ratio of Fines/Total
1970												
April	29	933	5.59	56.4	2,960		65	800	1,107	318	440	0.72
October	7	614	4.48	48.2	2,840		69	602	798	364	482	0.76
1971												
September	29	312	3.14	36.2	2,750		78	102	133	121	158	0.77
Apr 1970-Sept 1971		Avg. 620	4.40	46.9	2,850		71	501	679	268	360	0.75
		Max. 933	5.59	56.4	2,960		78	800	1,107	364	482	0.77
		Min. 312	3.14	36.2	2,750		65	102	133	121	158	0.72
1972												
January	14	775	5.46	49.3	2,880		45	516	886	247	424	0.58
April	19	604	4.31	49.1	2,850		59	230	353	141	217	0.65
May	10	1,056	6.03	59.9	2,920		63	444	908	156	319	0.49
	16	1,071	6.12	59.9	2,920		64	488	944	169	327	0.52
	25	901	5.27	58.8	2,910		70	454	707	187	291	0.64
June	1	647	4.40	51.0	2,880		74	340	443	195	254	0.77
	7	443	3.60	44.4	2,770		76	221	287	185	240	0.77
	14	375	3.35	40.9	2,740		78	263	313	260	310	0.84
	21	321	3.03	38.7	2,740		80	175	200	202	231	0.87
	28	402	3.47	41.7	2,780		80	196	238	181	220	0.82
July	6	481	3.94	43.3	2,820		78	372	471	287	363	0.79
	13	534	4.14	45.6	2,830		77	327	420	227	292	0.78
	20	426	3.58	42.8	2,780		80	144	194	125	169	0.74
	27	420	3.62	41.7	2,780		83	169	205	149	181	0.82

(Continued)

* AHP--above head of passes, miles.
** Fines--material finer than 0.062 mm.

Table 5 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1972												
August	2	373	3.36	40.7	2,730		84	111	150	110	149	0.74
	10	404	3.61	40.0	2,800		83	204	252	187	231	0.81
	17	417	3.53	42.0	2.810		82	189	339	168	302	0.56
	24	390	3.42	41.2	2,770		83	199	289	189	275	0.69
	30	377	3.37	40.6	2,760		82	143	185	141	182	0.77
September	7	324	3.06	38.7	2,740		83	109	134	125	154	0.81
	14	287	2.81	37.4	2,730		80	94	116	121	150	0.81
	27	370	3.36	39.6	2,780		78	253	320	254	321	0.79
Water Year 1971-72		Avg. 518	3.95	44.9	2,805		76	256	380	182	255	0.73
		Max. 1,071	6.12	59.9	2,920		84	516	944	287	424	0.87
		Min. 287	2.81	37.4	2,730		45	94	116	110	149	0.49
October	5	344	3.25	38.3	2,770		72	218	302	235	326	0.72
	12	430	3.84	40.0	2,800		71	213	286	184	247	0.74
	18	428	3.69	41.4	2,800		70	168	251	146	218	0.67
November	1	409	3.65	40.3	2,780		60	129	153	117	139	0.84
	9	648	4.70	48.3	2,860		58	583	973	334	557	0.60
	16	828	5.41	52.8	2,900		53	571	1,143	256	512	0.50
	22	957	5.98	55.0	2,910		48	696	1,303	270	505	0.53
	30	976	5.88	56.8	2,920		44	547	1,108	208	421	0.49
December	6	907	5.53	56.4	2,910		45	301	354	123	145	0.85
	14	896	5.50	56.0	2,910		42	490	1,024	203	424	0.48
	22	1,150	6.35	61.6	2,940		40	595	691	192	223	0.86

(Continued)

Table 5 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1973												
January	4	1,263	6.48	66.3	2,940		39	443	551	130	162	0.80
	17	1,166	6.20	63.9	2,940		38	493	1,006	157	320	0.49
	24	867	5.29	56.4	2,910		42	449	788	192	337	0.57
February	8	1,124	6.39	60.1	2,930		40	354	482	117	159	0.74
	14	1,112	6.25	60.8	2,930		40	935	1,367	312	456	0.68
	22	1,148	6.07	64.5	2,930		40	396	866	128	280	0.46
March	1	963	5.47	60.3	2,920		42	340	605	131	233	0.56
	7	710	4.55	54.0	2,890		47	360	568	188	297	0.63
	15	947	5.77	56.4	2,910		54	812	860	318	337	0.94
	28	1,417	7.09	66.9	2,990		53	794	1,448	208	379	0.55
April	3	1,560	7.96	65.6	2,990		56	601	1,093	143	260	0.55
	10	1,753	7.66	76.3	3,000		54	600	1,484	127	314	0.40
	17	1,720	7.75	74.0	3,000		54	589	1,437	127	310	0.41
	20	1,712	8.04	71.0	3,000		57	512	734	111	159	0.70
	24	1,655	7.66	72.0	3,000		58	424	1,209	95	271	0.35
	27	1,790	7.85	76.0	3,000		60	531	1,428	110	296	0.37
May	1	1,854	8.17	75.7	3,000		61	630	1,204	126	241	0.52
	4	1,866	8.22	75.7	3,000		62	548	1,318	109	262	0.42
	8	1,868	7.82	79.7	3,000		64	483	1,420	96	282	0.34
	11	1,903	8.03	79.0	3,000		65	533	1,246	104	243	0.43
	15	1,912	8.00	79.7	3,000		65	562	1,479	109	287	0.38
	18	2,017	8.37	80.3	3,000		65	549	1,386	101	255	0.40
	22	1,875	7.47	83.7	3,000		68	435	960	86	190	0.45
	25	1,911	7.93	80.3	3,000		69	438	984	85	191	0.45
	29	1,712	7.26	78.7	3,000		69	374	928	81	201	0.40

(Continued)

Table 5 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of Fines/Total
1973												
June	1	1,549	6.59	78.6	2,990		71	334	739	80	177	0.45
	5	1,378	6.10	76.1	2,970		72	323	691	87	186	0.47
	8	1,333	6.41	70.3	2,960		73	420	704	117	196	0.60
	12	1,268	6.13	69.9	2,960		74	410	646	120	189	0.63
	14	1,263	6.16	69.3	2,960		75	388	630	114	185	0.62
	19	1,230	6.03	68.9	2,960		78	325	547	98	165	0.59
	21	1,191	5.84	68.9	2,960		78	299	501	93	156	0.60
	26	1,028	5.35	64.0	3,000		80	338	457	122	165	0.74
	29	927	4.85	64.7	2,950		80	482	585	193	234	0.82
July	3	845	4.57	63.1	2,930		80	469	528	206	232	0.89
	6	762	4.23	61.4	2,930		81	370	477	180	232	0.78
	10	656	3.88	58.1	2,910		81	373	405	211	229	0.92
	13	612	3.75	56.4	2,890		81	416	470	252	285	0.88
	17	551	3.51	54.5	2,880		82	258	294	174	198	0.88
	20	506	3.29	53.8	2,860		82	351	386	257	283	0.91
	24	453	3.08	51.4	2,860		84	361	386	296	316	0.94
	26	420	2.98	49.1	2,870		83	273	294	241	260	0.93
August	2	604	3.85	53.6	2,930		80	612	698	376	429	0.88
	8	554	3.62	52.6	2,910		82	479	536	321	359	0.89
	16	353	2.76	45.1	2,840		82	201	217	211	228	0.93
	23	396	3.00	46.3	2,850		82	168	192	157	180	0.87
	30	362	2.83	45.1	2,840		81	176	190	180	195	0.92

(Continued)

Table 5 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of $\frac{\text{Fines}}{\text{Total}}$
1973												
September	6	322	2.62	43.5	2,830		79	151	158	174	182	0.96
	14	329	2.70	43.3	2,820		81	82	92	92	104	0.88
	20	289	2.49	41.1	2,820		77	62	69	79	89	0.89
	27	265	2.32	40.7	2,800		76	68	74	95	103	0.92
	Avg.	1,052	5.49	61.2	2,924		65	417	732	166	258	0.66
Water Year 1972-73	Max.	2,017	8.37	33.7	3,000		84	935	1,484	376	557	0.96
	Min.	265	2.32	38.3	2,770		38	62	69	79	89	0.34
October	4	304	2.53	42.4	2,830		77	93	102	114	125	0.91
	12	553	3.76	50.5	2,910		73	723	836	485	561	0.86
	18	571	3.73	52.4	2,920		68	425	449	276	292	0.95
	26	583	3.91	51.0	2,920		68	632	662	402	421	0.95
November	1	555	3.78	50.7	2,900		63	443	521	296	348	0.85
	9	496	3.52	48.6	2,900		59	303	385	227	288	0.79
	21	382	3.03	44.2	2,850		56	133	165	129	160	0.81
	29	615	4.13	51.0	2,920		58	980	1,184	591	714	0.83
December	5	946	5.23	61.8	2,930		54	966	1,249	379	490	0.77
	15	1,191	6.05	66.3	2,970		48	770	1,917	240	597	0.40
	20	1,131	5.95	64.0	2,970		44	497	540	162	177	0.92
	27	879	4.88	60.8	2,960		43	483	723	204	305	0.67
1974												
January	9	1,156	5.90	65.8	2,980		40	505	657	162	211	0.77
	17	1,261	6.21	69.5	2,920		39	476	547	140	161	0.87

(Continued)

Table 5 (Continued)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Concentration (ppm): Total	Ratio of $\frac{\text{Fines}}{\text{Total}}$
1974												
January	24	1,310	6.24	70.7	2,970		47	441	879	125	249	0.50
	31	1,418	6.69	71.1	2,980		48	661	1,494	173	391	0.44
February	7	1,485	6.78	73.2	2,990		48	600	1,745	150	436	0.34
	21	1,335	5.86	76.5	2,980		47	374	651	104	181	0.57
	28	1,136	5.31	72.1	2,970		46	367	799	120	261	0.46
March	7	1,090	5.32	69.0	2,970		50	382	599	130	204	0.62
	14	933	4.66	67.6	2,960		55	375	604	149	240	0.62
	21	1,079	5.32	68.4	2,970		54	532	896	183	308	0.59
	28	1,199	5.71	70.7	2,970		51	478	1,160	148	359	0.41
April	4	1,168	5.62	69.8	2,980		55	312	667	99	212	0.47
	11	1,028	5.17	67.2	2,960		57	599	823	216	297	0.73
	18	1,086	5.38	68.0	2,970		58	442	623	151	213	0.71
	25	1,101	5.48	67.7	2,970		61	516	736	174	248	0.70
May	2	989	5.12	65.4	2,950		65	445	557	167	209	0.80
	9	816	4.51	61.8	2,930		68	550	649	250	295	0.85
	16	774	4.23	62.9	2,910		69	469	503	225	241	0.93
June	6	1,019	5.34	64.5	2,960		74	838	1,035	305	377	0.81
	20	1,298	6.09	71.5	2,980		75	644	920	184	263	0.70
	27	1,180	5.57	71.1	2,980		74	604	906	190	285	0.67
July	3	958	4.86	66.8	2,950		76	555	661	215	256	0.84
	11	845	4.59	63.0	2,920		89	524	638	230	280	0.82
	18	626	3.82	56.7	2,890		83	574	645	340	382	0.89
	25	447	3.13	50.5	2,830		84	381	423	316	351	0.90
	31	387	2.87	48.4	2,790		82	250	266	240	255	0.94

(Continued)

Table 5 (Concluded)

Date		Streamflow (1000 cfs)	Avg. Vel. (fps)	Avg. Depth (ft)	Width (ft)	Water Surface Slope (10^{-4} ft/ft)	Water Temp. (°F)	Measured Suspended Sediment: Fines Yield (1000 Tons/Day)	Total Yield (1000 Tons/Day)	Concentration (ppm): Fines	Total	Ratio of Fines/Total
1974												
August	8	341	2.66	46.0	2,780		82	157	178	171	194	0.88
	21	419	3.08	48.2	2,820		81	159	192	141	170	0.83
	28	364	2.84	45.7	2,800		82	87	100	89	102	0.87
September	4	381	2.93	46.6	2,790		75	146	164	142	160	0.89
	11	567	3.73	53.1	2,860		75	264	339	173	222	0.78
	25	502	3.44	51.2	2,850		72	137	180	101	133	0.76
Water Year 1973-74	Avg.	861	4.66	60.6	2,921		63	461	681	209	287	0.74
	Max.	1,485	6.78	76.5	2,990		89	980	1,917	591	714	0.95
	Min.	304	2.53	42.4	2,780		39	87	100	89	102	0.34
October	2	391	2.96	47.1	2,800		68	118	145	112	138	0.81
	9	347	2.71	45.9	2,790		66	119	135	127	144	0.88
	16	297	2.50	43.3	2,750		66	151	158	188	197	0.95
	23	311	2.55	44.2	2,760		64	73	87	87	104	0.84
November	13	618	3.99	54.0	2,870		59	934	1,086	561	652	0.86
	20	700	4.17	57.5	2,920		55	757	926	401	491	0.82
	27	686	4.08	57.9	2,900		53	403	551	218	298	0.73
December	4	731	4.25	58.9	2,920		48	420	674	213	342	0.62
	11	653	4.01	56.2	2,900		46	211	368	120	209	0.57
	18	730	4.27	58.6	2,900		45	301	535	153	272	0.56
	26	705	4.35	55.9	2,900		47	317	716	167	377	0.44
Oct-Dec 1974	Avg.	561	3.62	52.7	2,855		56	346	489	213	293	0.74
	Max.	731	4.35	58.9	2,920		68	934	1,086	561	652	0.95
	Min.	297	2.50	43.3	2,750		45	73	87	87	104	0.44

Table 6

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1932

Reach Miles Below Cairo, Ill.	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt		
				Size of Sieve Opening in mm.																
				38.10	13.33	6.680	3.327	2.362	1.651	1.168	0.833	0.589	0.417	0.295	0.208	0.104	0.074	0.040	0.008	0.004
Cessions-Henrico			(1)*		1.06	1.12	2.24	1.38	1.66	1.84	2.18	7.98	24.54	21.08	14.06	15.58	0.48	4.80	0.00	
368.8 - 378.0	9.2	5	(2)	100.00	98.94	97.82	95.58	94.20	92.54	90.70	88.52	80.54	56.00	34.92	20.86	5.28	4.80	0.00		
			(3)				100.00	99.90	99.90	99.80	99.60	98.30	85.70	64.30	45.30	23.40	22.70	0.00		
			(4)	100.00	94.70	92.80	89.50	83.60	76.60	69.40	63.40	55.60	42.30	20.60	6.20	0.10	0.00			
Smith Pt.-Terrene			(1)		0.00	0.30	1.33	0.97	0.93	1.00	1.90	6.43	12.73	24.60	28.97	18.93	0.97	0.94	0.00	
378.0 - 389.9	11.9	3	(2)		100.00	99.70	98.37	97.40	96.47	95.47	93.57	87.14	74.41	49.81	20.84	1.91	0.94	0.00		
			(3)						100.00	99.90	99.60	98.40	95.00	71.70	35.90	2.70	2.10	0.00		
			(4)		100.00	99.10	95.10	92.30	89.50	86.70	81.70	64.90	37.30	16.80	5.60	0.70	0.20	0.00		
Terrene-Ozark			(1)		8.41	2.53	2.48	1.25	1.33	1.39	2.02	6.61	17.46	15.67	18.94	19.52	1.19	1.20	0.00	
389.9 - 402.0	12.1	19	(2)	100.00	91.59	89.06	86.58	85.33	84.00	82.61	80.59	73.98	56.52	40.85	21.91	2.39	1.20	0.00		
			(3)							100.00	99.90	99.60	98.20	95.10	75.70	19.10	13.80	0.00		
			(4)	100.00	27.20	26.20	24.30	22.90	21.80	18.30	14.90	10.20	5.40	2.00	0.50	0.00				
Ozark-Eutaw			(1)		8.26	2.30	1.78	0.96	1.12	1.24	1.61	4.77	18.09	21.85	15.39	6.41	1.27	1.78	4.27	8.90
402.0 - 429.3	27.3	17	(2)	100.00	91.74	89.44	87.66	86.70	85.58	84.34	82.73	77.96	59.87	38.02	22.63	16.22	14.95	13.17	8.90	0.00
			(3)												100.00	97.10	90.80	85.40	65.00	0.00
			(4)	100.00	20.20	12.60	8.70	7.30	6.20	5.40	4.50	3.00	1.20	0.40	0.10	0.00				
Choctaw Bar			(1)		4.17	2.95	1.55	0.65	0.75	1.06	1.85	6.23	21.76	29.47	15.38	9.59	1.34	3.25	0.00	
429.3 - 443.0	13.7	14	(2)	100.00	95.83	92.88	91.33	90.68	89.93	88.87	87.02	80.79	59.03	29.56	14.18	4.59	3.25	0.00		
			(3)						100.00	99.90	99.90	99.80	96.40	72.10	49.40	34.00	20.10	0.00		
			(4)	100.00	56.00	23.90	12.60	9.10	7.00	5.80	5.00	3.80	1.70	0.30	0.10	0.00				
Greenville			(1)		3.61	3.87	2.04	1.03	1.29	1.68	3.18	8.23	21.77	25.97	16.76	4.82	0.57	0.65	1.21	0.65
443.0 - 491.7	48.7	53	(2)	100.00	96.39	92.52	90.48	89.45	88.16	86.48	83.30	75.07	53.30	27.33	10.57	5.75	5.18	4.53	3.32	2.67
			(3)													100.00	94.80	30.80	70.80	62.40
			(4)	100.00	56.20	13.10	0.70	0.20	0.10	0.10	0.00									
Lakeport			(1)		7.72	5.88	3.63	1.90	1.90	2.13	3.07	7.67	17.13	23.90	12.93	11.73	0.28	0.13	0.00	
491.7 - 498.7	7.0	6	(2)	100.00	92.28	86.40	82.77	80.87	78.97	76.84	73.77	66.10	48.97	25.07	12.14	0.41	0.13	0.00		
			(3)				100.00	99.90	99.90	99.70	99.60	98.90	89.80	77.30	52.30	1.40	0.40	0.00		
			(4)	100.00	72.90	56.60	50.80	44.30	38.40	32.80	26.10	14.20	5.80	3.20	0.60	0.10	0.00			

(Continued)

(Sheet 1 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

Table 6 (Continued)

Reach Miles Below Cairo, Ill.	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt		
				Size of Sieve Opening in mm.																
				38.10	13.33	6.680	3.327	2.362	1.651	1.168	0.833	0.589	0.417	0.295	0.208	0.104	0.074	0.040	0.008	0.004
Kentucky Bend			(1)*		3.99	1.19	2.68	1.16	1.14	1.53	2.51	9.44	26.56	23.18	18.70	7.05	0.62	0.25	0.00	
498.7 - 509.4	10.7	8	(2)	100.00	96.01	94.82	92.14	90.98	89.84	88.31	85.80	76.36	49.80	26.62	7.92	0.87	0.25	0.00		
			(3)						100.00	99.90	99.90	98.80	91.00	78.50	32.40	3.70	1.00	0.00		
			(4)	100.00	68.10	58.60	48.90	45.00	42.20	40.20	38.00	33.60	20.40	3.00	0.50	0.10	0.10	0.00		
Cracraft-Carolina			(1)		13.30	1.45	1.09	0.55	0.78	1.20	1.94	6.03	17.49	26.92	19.85	7.81	1.32	0.27	0.00	
509.4 - 520.7	11.3	10	(2)	100.00	86.70	85.25	84.16	83.61	82.83	81.63	79.69	73.66	56.17	29.25	9.40	1.59	0.27	0.00		
			(3)						100.00	99.90	99.90	99.60	98.70	82.10	31.90	9.90	1.10	0.00		
			(4)	100.00	1.50	1.10	1.00	1.00	1.00	0.90	0.80	0.70	0.50	0.30	0.20	0.10	0.00			
Carolina-Baleshed			(1)			0.00	0.21	0.11	0.17	0.23	0.46	1.65	9.32	25.00	45.76	15.59	1.05	0.45	0.00	
520.7 - 534.3	13.6	11	(2)			100.00	99.79	99.68	99.51	99.28	98.82	97.17	87.85	62.85	17.09	1.50	0.45	0.00		
			(3)							100.00	99.90	99.80	98.70	91.80	62.00	14.00	3.70	0.00		
			(4)			100.00	99.00	98.40	97.90	97.30	96.30	92.60	63.30	22.80	3.90	0.10	0.10	0.00		
Baleshed Landing			(1)		1.61	0.95	0.73	0.52	0.70	1.18	2.33	8.29	26.68	24.97	19.84	11.25	0.17	0.78	0.00	
534.3 - 544.0	9.7	15	(2)	100.00	98.39	97.44	96.71	96.19	95.49	94.31	91.98	83.69	57.01	32.04	12.20	0.95	0.78	0.00		
			(3)					100.00	99.90	99.90	99.80	99.80	99.40	93.00	78.10	10.30	10.00	0.00		
			(4)	100.00	84.10	81.40	78.10	75.60	72.60	68.30	62.30	48.80	17.40	2.20	0.40	0.10	0.00			
Ajax Bar			(1)		21.87	2.97	2.90	1.23	1.07	1.23	1.63	4.50	20.60	25.77	13.57	2.50	0.10	0.06	0.00	
544.0 - 548.9	4.9	3	(2)	100.00	78.13	75.16	72.26	71.03	69.96	68.73	67.10	62.60	42.00	16.23	2.66	0.16	0.06	0.00		
			(3)					100.00	99.90	99.80	99.80	98.80	60.50	37.00	7.00	0.30	0.10	0.00		
			(4)	100.00	34.40	27.20	22.20	20.10	18.10	16.10	13.90	9.90	5.30	2.30	0.50	0.10	0.00			
Ajax-Cottonwood			(1)		3.35	1.42	1.52	1.08	1.45	2.20	4.20	15.03	28.48	22.37	12.72	5.95	0.17	0.06	0.00	
548.9 - 556.2	7.3	6	(2)	100.00	96.65	95.23	93.71	92.63	91.18	88.98	84.78	69.75	41.27	18.90	6.18	0.23	0.06	0.00		
			(3)								100.00	99.30	87.40	59.30	22.70	0.60	0.20	0.00		
			(4)	100.00	84.20	83.00	82.50	81.90	80.30	75.30	65.90	38.50	5.80	2.40	0.90	0.10	0.00			
Cottonwood Bar			(1)		0.00	0.07	0.53	0.13	0.27	0.43	1.20	5.63	19.40	32.77	29.80	9.40	0.33	0.04	0.00	
556.2 - 561.0	4.8	3	(2)		100.00	99.93	99.40	99.27	99.00	98.57	97.37	91.74	72.34	39.57	9.77	0.37	0.04	0.00		
			(3)			100.00	99.80	99.60	99.30	98.80	97.50	92.80	75.70	48.20	16.80	0.90	0.10	0.00		
			(4)		100.00	99.80	98.90	98.80	98.50	98.10	97.20	90.50	66.70	33.20	5.10	0.10	0.00			

(Continued)

(Sheet 2 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

Table 6 (Continued)

Reach Miles Below Cairo, Ill.	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt		
				Size of Sieve Opening in mm.																
				38.10	13.33	6.680	3.327	2.362	1.651	1.168	0.833	0.589	0.417	0.295	0.208	0.104	0.074	0.040	0.008	0.004
Cottonwood - Belle Is.			(1)*		1.13	1.99	1.40	0.79	1.25	1.93	3.28	10.35	28.16	26.69	8.49	2.03	1.39	3.36	3.79	0.86
561.0 - 574.0	13.0	8	(2)	100.00	98.87	96.88	95.48	94.69	93.44	91.51	88.23	77.88	49.72	23.03	14.54	12.51	11.12	7.76	3.97	3.11
			(3)													100.00	90.30	64.30	34.00	27.10
			(4)	100.00	95.50	86.20	82.70	81.60	80.30	77.80	68.00	51.00	17.30	2.10	0.20	0.10	0.10	0.00		
Belle Is.-Milliken			(1)		24.23	3.65	2.11	0.93	0.90	1.33	2.81	12.36	27.10	15.04	6.46	2.91	0.10	0.07	0.00	
574.0 - 585.5	11.5	10	(2)	100.00	75.77	72.12	70.01	69.08	68.18	66.85	64.04	51.68	24.58	9.54	3.08	0.17	0.07	0.00		
			(3)				100.00	99.90	99.80	99.80	99.20	94.00	66.80	32.50	8.90	0.60	0.10	0.00		
			(4)	100.00	5.40	0.40	0.00													
Milliken-Vicksburg			(1)		9.66	1.87	1.10	0.61	0.79	1.30	2.15	7.20	18.75	19.37	18.15	16.42	0.62	0.70	1.11	0.22
585.5 - 603.6	18.1	37	(2)	100.00	90.34	88.47	87.37	86.76	85.97	84.67	82.52	75.32	56.57	37.20	19.05	2.63	2.01	1.31	0.20	0.00
			(3)												100.00	99.20	93.60	80.50	39.40	31.30
			(4)	100.00	8.60	0.00														
Racetrack-Towhead			(1)		1.00	1.03	0.53	0.27	0.28	0.40	0.90	5.44	20.01	24.21	27.12	11.46	1.43	3.09	0.92	0.55
603.6 - 621.6	18.0	23	(2)	100.00	99.00	97.97	97.44	97.17	96.89	96.49	95.59	90.15	70.14	45.93	18.81	7.35	5.92	2.83	1.91	1.36
			(3)												100.00	93.80	71.50	63.90	42.80	30.20
			(4)	100.00	83.60	67.80	64.50	63.00	62.00	60.80	59.20	51.00	18.30	4.70	1.20	0.10	0.00			
Pt. Pleasant			(1)		0.00	0.63	0.54	0.34	0.43	0.76	1.56	6.35	17.67	17.75	9.13	20.60	6.56	4.44	6.13	4.90
621.6 - 644.0	22.4	13	(2)		100.00	99.37	98.83	98.49	98.06	97.30	95.74	89.39	71.72	53.97	44.84	24.24	17.68	13.24	7.11	2.21
			(3)													100.00	95.40	90.40	49.90	28.70
			(4)		100.00	94.10	89.90	87.10	83.40	77.10	65.50	38.10	13.50	4.40	0.50	0.10	0.10	0.00		
Grand Gulf			(1)		4.43	2.88	0.70	0.25	0.28	0.35	0.92	5.20	16.52	21.47	21.83	8.77	1.50	1.92	5.03	2.55
644.0 - 659.3	15.3	6	(2)	100.00	95.57	92.69	91.99	91.74	91.46	91.11	90.19	84.99	68.47	47.00	25.17	16.40	14.90	12.98	7.95	5.40
			(3)												100.00	95.50	88.50	77.90	47.70	32.40
			(4)	100.00	73.40	56.10	52.20	50.80	49.60	48.00	44.30	29.30	14.30	4.60	1.20	0.20	0.10	0.00		
Rodney			(1)		10.82	3.14	2.10	1.22	1.00	1.20	2.04	9.14	25.00	26.12	13.58	3.08	0.22	1.34	0.00	
659.3 - 676.5	17.2	5	(2)	100.00	89.18	86.04	83.94	82.72	81.72	80.52	78.48	69.34	44.34	18.22	4.64	1.56	1.34	0.00		
			(3)			100.00	99.70	99.60	99.40	99.30	98.90	97.40	88.30	38.40	12.50	6.90	6.30	0.00		
			(4)	100.00	67.20	60.10	57.20	55.90	54.80	53.60	51.80	44.80	20.80	6.00	1.40	0.10	0.10	0.00		

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

Table 6 (Concluded)

Reach Miles Below Cairo, Ill.	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt		
				Size of Sieve Opening in mm.																
				38.10	13.33	6.680	3.327	2.362	1.651	1.168	0.833	0.589	0.417	0.295	0.208	0.104	0.074	0.040	0.008	0.004
Waterproof			(1)*		0.00	0.20	0.53	0.53	0.55	0.90	1.63	6.83	19.23	25.75	25.53	17.73	0.41	0.18	0.00	
676.5 - 593.7	17.2	4	(2)		100.00	99.80	99.27	98.74	98.19	97.29	95.66	88.83	69.60	43.85	18.32	0.59	0.18	0.00		
			(3)					100.00	99.90	99.90	99.80	98.60	92.10	84.50	51.40	1.80	0.40	0.00		
			(4)		100.00	99.20	97.30	95.40	93.70	90.50	85.00	65.80	35.90	15.70	4.40	0.10	0.10	0.00		
Natchez			(1)		1.78	1.37	1.11	0.36	0.37	0.62	1.21	7.95	18.93	21.27	31.58	13.09	0.21	0.10	0.00	
693.7 - 713.8	20.1	10	(2)	100.00	98.22	96.85	95.74	95.38	95.01	94.39	93.18	85.23	66.30	45.03	13.45	0.36	0.15	0.05	0.00	
			(3)						100.00	99.90	99.90	99.80	99.60	95.30	42.90	1.10	0.20	0.00		
			(4)	100.00	90.70	85.60	80.60	77.90	75.90	72.10	66.80	51.90	6.90	1.90	0.30	0.10	0.00			
St. Catherine			(1)		0.89	0.76	0.53	0.20	0.28	0.38	0.67	3.88	17.01	28.70	22.22	22.18	1.88	0.42	0.00	
713.8 - 738.9	25.1	10	(2)	100.00	99.11	98.35	97.82	97.62	97.34	96.96	96.29	92.41	75.40	46.70	24.48	2.30	0.42	0.00		
			(3)						100.00	99.90	99.90	99.70	99.40	99.00	97.50	11.20	2.30	0.00		
			(4)	100.00	91.10	85.40	82.90	82.30	81.50	80.70	79.60	73.50	31.30	6.30	1.30	0.10	0.10	0.00		
Bougere			(1)		0.00	0.24	1.10	0.68	0.78	1.74	2.68	10.64	19.80	23.70	17.70	20.42	0.38	0.14	0.00	
738.9 - 755.0	16.1	5	(2)		100.00	99.76	98.66	97.98	97.20	95.46	92.78	82.14	62.34	38.64	20.94	0.52	0.14	0.00		
			(3)						100.00	99.90	99.90	99.80	99.70	99.60	85.50	1.50	0.30	0.00		
			(4)		100.00	99.10	97.00	95.30	92.90	88.50	82.30	56.50	15.50	2.40	0.70	0.10	0.10	0.00		

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

(Sheet 4 of 4)

Table 7

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1966

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico 616.0 - 606.0	10.0	5	(1)*		0.00	1.22	0.64	1.10	3.06	4.52	12.18	26.05	25.72	18.86	5.78	0.73	0.09	0.05
			(2)		100.00	98.78	98.14	97.04	93.98	89.46	77.26	51.23	25.50	6.64	0.86	0.13	0.05	0.00
			(3)					100.00	99.87	99.62	98.74	94.51	57.98	20.88	1.70	0.19	0.06	0.00
			(4)		100.00	96.69	95.57	94.40	86.60	73.77	47.89	14.54	2.75	0.51	0.15	0.07	0.04	0.00
Smith Pt.-Terrene 606.0 - 594.2	11.8	4	(1)			0.00	0.24	0.71	2.12	3.33	9.52	34.75	26.70	17.43	4.19	0.82	0.13	0.05
			(2)			100.00	99.76	99.05	96.94	93.60	84.08	49.33	22.63	5.19	1.00	0.18	0.05	0.00
			(3)					100.00	99.83	99.56	97.67	83.09	54.21	10.92	1.61	0.24	0.06	0.00
			(4)			100.00	99.38	97.69	92.12	84.38	67.50	32.53	8.37	1.86	0.44	0.11	0.05	0.00
Terrene-Ozark 594.2 - 581.0	13.2	24	(1)	0.00	0.20	1.31	0.48	0.69	1.53	2.04	6.49	23.51	35.69	17.66	7.92	2.04	0.33	0.12
			(2)	100.00	99.80	98.49	98.01	97.33	95.80	93.76	87.27	63.76	28.06	10.40	2.48	0.45	0.12	0.00
			(3)						100.00	99.93	99.66	98.72	95.23	66.42	16.87	2.84	0.59	0.00
			(4)	100.00	95.27	88.33	83.69	77.04	64.93	53.96	39.79	14.52	1.75	0.48	0.15	0.07	0.04	0.00
Ozark-Eutaw 581.0 - 565.9	15.1	20 1**	(1)	0.00	0.77	0.84	0.64	0.42	0.87	1.07	5.19	24.32	34.50	19.73	5.59	0.86	0.15	5.06
			(2)	100.00	99.23	98.39	97.75	97.34	96.47	95.40	90.22	65.90	31.39	11.66	6.07	5.21	5.06	0.00
			(3)							100.00	99.67	98.16	92.61	31.72	4.28	0.71	0.18	0.00
			(4)	100.00	89.67	79.22	71.73	66.48	58.09	50.92	34.21	5.11	1.46	0.60	0.14	0.06	0.03	0.00
Choctaw Bar 565.9 - 550.4	15.5	8	(1)	0.00	1.58	4.29	1.82	1.09	1.49	1.79	7.88	24.78	29.31	18.37	6.28	1.12	0.14	0.06
			(2)	100.00	98.42	94.13	92.31	91.22	89.74	87.95	80.07	55.29	25.98	7.61	1.33	0.21	0.06	0.00
			(3)							100.00	99.85	94.94	73.71	20.52	4.28	0.42	0.10	0.00
			(4)	100.00	87.34	63.47	54.27	48.68	43.13	39.09	26.83	11.76	3.64	0.94	0.22	0.07	0.04	0.00
Greenville 550.4 - 531.2	19.2	48	(1)	0.00	0.31	0.51	0.29	0.28	0.60	0.99	4.19	20.10	31.88	22.04	13.26	4.10	0.81	0.66
			(2)	100.00	99.69	99.19	98.90	98.62	98.02	97.04	92.85	72.75	40.87	18.84	5.58	1.47	0.66	0.00
			(3)							100.00	99.90	99.34	97.45	85.70	42.85	23.26	19.08	0.00
			(4)	100.00	85.31	83.78	82.04	79.13	75.27	69.96	57.38	12.89	3.68	1.09	0.25	0.07	0.04	0.00
Lakeport 531.2 - 524.2	7.0	4	(1)		0.00	3.35	1.46	1.42	2.46	3.29	8.13	29.89	33.76	8.90	5.34	1.77	0.17	0.06
			(2)		100.00	96.65	95.19	93.77	91.31	88.02	79.89	50.00	16.24	7.35	2.01	0.24	0.06	0.00
			(3)				100.00	99.86	99.32	97.56	90.34	59.71	28.22	15.62	4.20	0.43	0.07	0.00
			(4)		100.00	94.92	92.17	89.78	86.22	83.03	74.60	36.43	5.52	1.55	0.32	0.09	0.05	0.00

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.
** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 7 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	19.05	9.525	4.699	2.362	Sand 1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	Silt Clay 0.000
				Size of Sieve Opening in mm.														
Kentucky Bend 524.2 - 514.8	9.4	4	(1)*		0.00	0.50	0.17	0.11	0.36	0.98	5.10	22.83	43.82	17.06	7.51	1.37	0.12	0.08
			(2)		100.00	99.50	99.33	99.22	98.86	97.88	92.78	69.94	26.12	9.07	1.56	0.19	0.08	0.00
			(3)						100.00	99.93	99.39	95.08	51.85	19.06	2.42	0.27	0.13	0.00
			(4)		100.00	98.02	97.32	97.00	96.31	94.59	84.69	50.16	11.08	3.43	0.48	0.11	0.05	0.00
Cracraft-Carolina 514.8 - 506.6	8.2	68 3**	(1)		0.00	0.98	0.80	0.79	1.58	1.71	4.93	17.84	32.54	20.82	8.52	2.81	1.08	5.60
			(2)		100.00	99.02	98.22	97.43	95.85	94.14	89.21	71.36	38.82	18.00	9.49	6.68	5.60	0.00
			(3)							100.00	99.95	99.36	97.25	90.09	57.21	43.86	36.11	0.00
			(4)		100.00	87.49	72.77	57.57	43.47	34.83	23.08	7.11	1.20	0.40	0.24	0.07	0.03	0.00
Carolina-Baleshed 506.6 - 495.6	11.0		(1)															
			(2)															
			(3)															
			(4)															
Baleshed Landing 495.6 - 485.6	10.0	27	(1)	0.00	0.13	1.11	1.00	0.82	2.01	2.91	9.46	27.07	27.24	16.55	8.26	2.58	0.72	0.16
			(2)	100.00	99.87	98.76	97.76	96.94	94.94	92.03	82.57	55.51	28.27	11.72	3.46	0.88	0.16	0.00
			(3)							100.00	99.19	96.22	88.05	77.73	26.21	11.07	1.83	0.00
			(4)	100.00	96.36	91.32	88.21	86.19	82.90	70.91	50.23	12.45	0.96	0.27	0.17	0.06	0.03	0.00
Ajax Bar 485.6 - 479.8	5.8	118 2**	(1)	0.00	0.36	1.01	0.75	0.64	1.10	1.39	4.47	18.72	34.24	25.39	7.56	1.79	0.45	2.13
			(2)	100.00	99.64	98.63	97.88	97.24	96.14	94.76	90.29	71.57	37.33	11.93	4.37	2.58	2.13	0.00
			(3)								100.00	99.44	95.73	66.12	30.29	22.16	15.69	0.00
			(4)	100.00	83.31	37.18	15.43	5.63	0.86	0.49	0.40	0.33	0.24	0.15	0.09	0.04	0.02	0.00
Ajax-Cottonwood 479.8 - 472.0	7.8		(1)															
			(2)															
			(3)															
			(4)															
Cottonwood Bar 472.0 - 467.8	4.2	12	(1)	0.00	1.16	0.73	0.47	0.65	1.57	3.46	10.69	34.64	25.23	10.03	4.77	2.86	2.03	1.70
			(2)	100.00	98.84	98.11	97.64	96.99	95.42	91.97	81.28	46.63	21.40	11.37	6.60	3.74	1.74	0.00
			(3)						100.00	99.93	99.61	98.57	88.91	72.45	58.10	41.22	19.66	0.00
			(4)	100.00	92.38	88.09	86.88	83.31	76.83	65.90	43.86	23.06	2.17	0.52	0.12	0.06	0.03	0.00

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 7 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cottonwood-Belle Is. 467.8 - 461.4	6.4		(1)*															
			(2)															
			(3)															
			(4)															
Belle Is.-Milliken 461.4 - 451.8	9.6	4	(1)	0.00	6.86	1.06	0.51	0.24	0.35	1.04	4.76	21.67	27.95	24.37	8.65	2.12	0.30	0.12
			(2)	100.00	93.14	92.07	91.57	91.32	90.97	89.94	85.18	63.50	35.56	11.18	2.54	0.42	0.12	0.00
			(3)					100.00	99.95	99.90	99.80	99.50	90.05	31.52	7.00	1.20	0.30	0.00
			(4)	100.00	78.00	73.75	73.11	72.63	72.21	71.03	65.96	40.56	12.37	3.17	0.64	0.11	0.04	0.00
Milliken-Vicksburg 451.8 - 435.0	16.8		(1)															
			(2)															
			(3)															
			(4)															
Racetrack-Towhead 435.0 - 422.8	12.2	9	(1)	0.00	2.63	0.76	0.47	0.15	0.18	0.27	1.99	12.84	30.39	29.82	11.74	6.20	2.06	0.51
			(2)	100.00	97.37	96.62	96.14	95.99	95.81	95.54	93.55	80.71	50.32	20.50	8.77	2.57	0.51	0.00
			(3)							100.00	99.96	99.73	95.58	70.45	56.98	18.56	3.81	0.00
			(4)	100.00	76.36	76.36	75.27	74.82	74.64	74.18	69.84	52.54	17.49	3.64	0.56	0.14	0.00	
Pt. Pleasant 422.8 - 407.4	15.4	13	(1)		0.00	2.33	0.63	0.48	0.66	1.12	4.92	18.93	41.95	19.41	7.32	1.83	0.34	0.08
			(2)		100.00	97.67	97.04	96.56	95.90	94.78	89.86	70.93	28.98	9.57	2.25	0.42	0.08	0.00
			(3)					100.00	99.96	99.83	99.27	96.13	63.09	18.91	9.02	1.94	0.31	0.00
			(4)		100.00	79.94	77.55	76.42	75.98	75.73	65.23	19.88	3.09	0.71	0.25	0.10	0.03	0.00
Grand Gulf 407.4 - 395.2	12.2		(1)															
			(2)															
			(3)															
			(4)															
Rodney 395.2 - 381.4	13.8	3	(1)				0.00	0.07	0.03	0.04	0.63	5.71	25.53	46.33	17.38	3.41	0.73	0.13
			(2)				100.00	99.93	99.90	99.85	99.22	93.52	67.99	21.66	4.28	0.87	0.13	0.00
			(3)							100.00	99.89	99.54	99.08	43.58	7.85	1.65	0.23	0.00
			(4)				100.00	99.87	99.81	99.72	98.89	86.11	27.06	3.22	0.76	0.20	0.04	0.00

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

(Sheet 3 of 4)

Table 7 (Concluded)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Waterproof 381.4 - 368.2	13.2	4	(1)*		0.00	0.50	0.14	0.08	0.10	0.18	1.40	12.36	52.41	19.30	10.68	2.54	0.26	0.05
			(2)		100.00	99.50	99.37	99.29	99.19	99.00	97.61	85.25	32.84	13.54	2.85	0.31	0.05	0.00
			(3)					100.00	99.97	99.97	99.90	96.45	58.93	31.10	5.04	0.51	0.11	0.00
			(4)		100.00	98.01	97.82	97.55	97.21	96.66	93.32	73.72	20.66	5.06	0.81	0.15	0.03	0.00
Natchez 368.2 - 355.2	13.0		(1)															
			(2)															
			(3)															
			(4)															
St. Catherine 355.2 - 338.6	16.6		(1)															
			(2)															
			(3)															
			(4)															
Bougere 338.6 - 320.4	18.2		(1)															
			(2)															
			(3)															
			(4)															

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

(Sheet 4 of 4)

Table 8

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1967

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico 616.0 - 606.0	10.0		(1)*															
			(2)															
			(3)															
			(4)															
Smith Pt.-Terrene 606.0 - 594.2	11.8		(1)															
			(2)															
			(3)															
			(4)															
Terrene-Ozark 594.2 - 581.0	13.2	28	(1)	0.00	0.40	2.51	1.72	1.60	2.70	2.81	9.15	19.45	34.94	18.88	4.76	0.73	0.19	0.17
		0**	(2)	100.00	99.60	97.09	95.37	93.78	91.08	88.27	79.12	59.67	24.73	5.85	1.09	0.36	0.17	0.00
			(3)						100.00	99.91	99.62	96.14	83.51	31.88	12.01	5.11	1.52	0.04
			(4)	100.00	88.94	71.82	54.96	42.26	27.00	15.94	3.70	0.43	0.10	0.03	0.03	0.03	0.03	0.00
Ozark-Eutaw 581.0 - 565.9 *includes discharge range*	15.1	40	(1)	0.00	2.42	3.40	1.80	1.05	1.82	1.92	5.77	16.55	37.02	19.41	5.05	0.84	0.30	2.65
		1**	(2)	100.00	97.58	94.18	92.38	91.33	89.51	87.59	81.82	65.27	28.25	8.84	3.79	2.95	2.65	0.00
			(3)								100.00	98.99	89.79	29.97	13.12	6.46	2.03	0.00
			(4)	100.00	52.68	13.19	6.57	4.74	3.52	2.77	1.74	1.03	0.47	0.14	0.00			
Choctaw Bar 565.9 - 550.4	15.5	86	(1)	0.00	0.86	2.67	1.77	1.44	2.22	2.07	6.25	16.70	30.18	23.65	9.91	1.65	0.32	0.32
		0**	(2)	100.00	99.14	96.47	94.70	93.26	91.04	88.97	82.72	66.03	35.85	12.20	2.29	0.64	0.32	0.00
			(3)								100.00	99.85	99.64	75.05	26.39	22.38	16.66	0.00
			(4)	100.00	80.51	65.14	58.16	39.07	12.39	4.59	0.95	0.48	0.30	0.09	0.05	0.00		
Greenville 550.4 - 531.2	19.2	73	(1)	0.00	1.10	1.13	1.12	1.08	1.78	1.97	7.03	21.06	37.35	17.53	6.79	1.38	0.34	0.35
		0**	(2)	100.00	98.90	97.78	96.66	95.58	93.80	91.83	84.80	63.74	26.39	8.85	2.07	0.69	0.35	0.00
			(3)								100.00	99.78	99.33	96.56	41.60	27.06	16.65	0.00
			(4)	100.00	77.41	73.27	70.68	58.20	41.60	30.47	13.47	3.93	0.51	0.15	0.06	0.04	0.00	
Lakeport Towhead 531.2 - 524.2	7.0	21	(1)		0.00	1.76	0.79	0.79	1.58	1.69	5.46	19.06	34.17	26.95	6.83	0.72	0.10	0.11
		0**	(2)		100.00	98.24	97.45	96.66	95.08	93.39	87.93	68.87	34.71	7.76	0.93	0.21	0.11	0.00
			(3)							100.00	99.94	99.60	82.82	38.12	4.19	0.84	0.51	0.00
			(4)		100.00	90.81	89.32	84.38	77.41	71.93	59.84	35.22	7.37	0.51	0.09	0.06	0.05	0.00

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

(Sheet 1 of 4)

AD-A044 285 ARMY ENGINEER DISTRICT VICKSBURG MISS F/G 8/8
SUSPENDED SEDIMENT AND BED MATERIAL STUDIES ON THE LOWER MISSIS--ETC(U)
AUG 77 L G ROBBINS
UNCLASSIFIED 300-1 NL

2 OF 3
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A044285

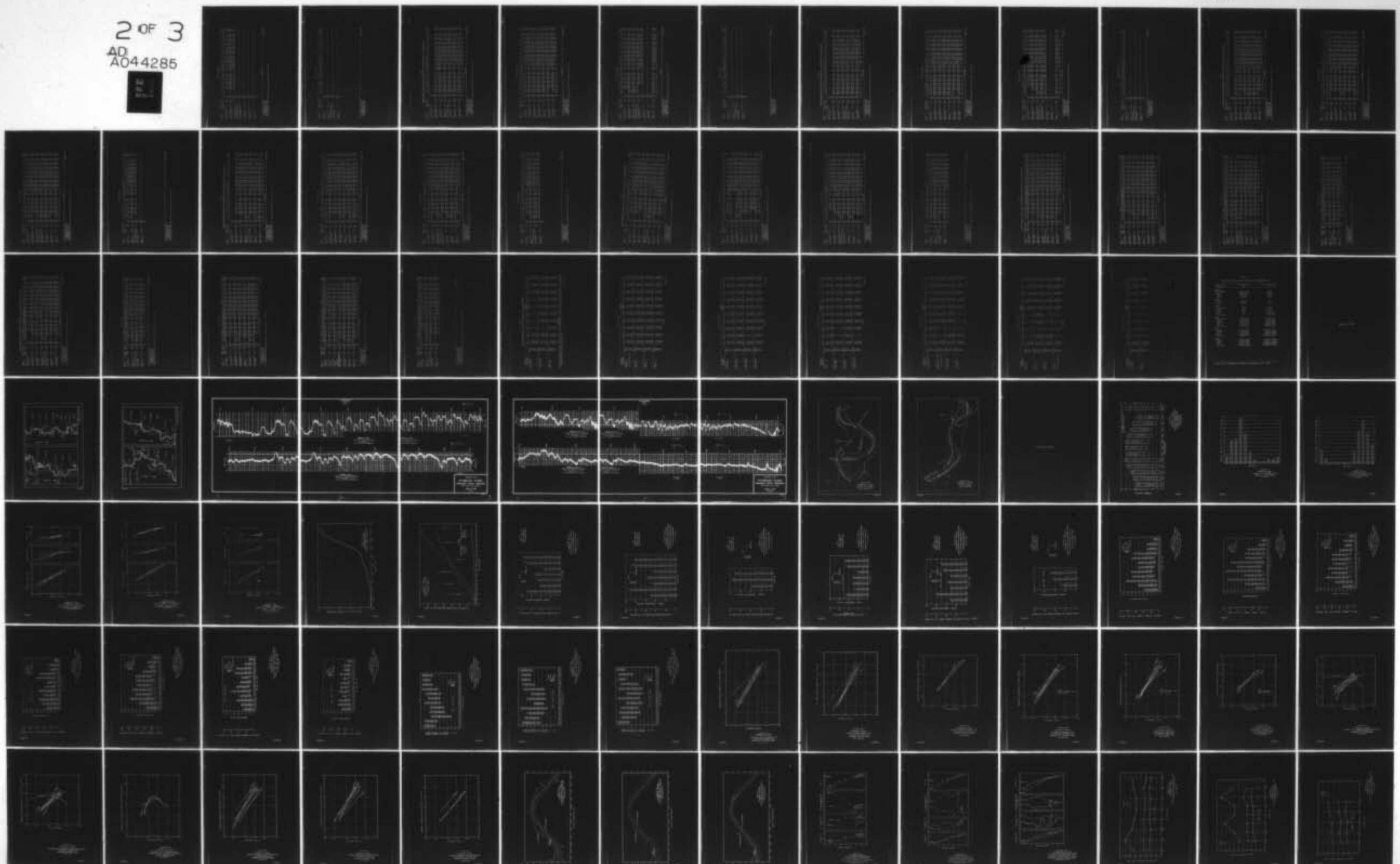


Table 8 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	Gravel 19.05	Gravel 9.525	Gravel 4.699	Gravel 2.362	Sand 1.168	Sand 0.833	Sand 0.589	Sand 0.417	Sand 0.295	Sand 0.208	Sand 0.147	Sand 0.104	Sand 0.074	Silt Clay 0.000
				Size of Sieve Opening in mm.														
Cottonwood-Belle Is	6.4	8	(1)*		0.00	1.51	1.49	0.95	2.04	1.99	4.60	13.70	15.76	28.51	19.12	6.79	2.52	1.01
467.8 - 461.4		0**	(2)		100.00	98.49	97.00	96.05	94.01	92.01	87.42	73.71	57.95	29.44	10.32	3.53	1.01	0.00
			(3)								100.00	99.78	99.31	88.18	59.31	24.22	7.27	0.00
			(4)		100.00	88.40	76.87	70.01	56.16	46.29	30.54	14.80	8.68	5.27	0.89	0.15	0.05	0.00
Belle Is-Milliken	9.6	16	(1)		0.00	0.98	0.58	0.38	0.86	1.46	5.98	26.13	41.92	15.79	4.80	0.90	0.15	0.07
461.4 - 451.8		0**	(2)		100.00	99.02	98.44	98.06	97.21	95.74	89.76	63.64	21.71	5.92	1.12	0.22	0.07	0.00
			(3)							100.00	99.94	96.90	47.83	19.62	5.03	0.52	0.15	0.00
			(4)		100.00	90.40	88.87	88.70	88.36	77.88	44.06	9.25	2.06	0.70	0.23	0.06	0.00	
Milliken-Vicksburg	16.8		(1)															
451.8 - 435.0			(2)															
Includes discharge range			(3)															
			(4)															
Racetrack-Towhead	12.2		(1)															
435.0 - 422.8			(2)															
			(3)															
			(4)															
Pt. Pleasant	15.4		(1)															
422.8 - 407.4			(2)															
			(3)															
			(4)															
Grand Gulf	12.2		(1)															
407.4 - 395.2			(2)															
			(3)															
			(4)															
Rodney	13.8		(1)															
395.2 - 381.4			(2)															
			(3)															
			(4)															

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 8 (Concluded)

Reach Mile AHP	Reach Length in Mi.	No. of Samples	Gravel					Sand									Silt Clay
			Size of Sieve Opening in mm.														
			38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Waterproof 381.4 - 368.2	13.2	(1)*															
		(2)															
		(3)															
		(4)															
Natchez 368.2 - 355.2 Includes discharge range	13.0	(1)															
		(2)															
		(3)															
		(4)															
St. Catherine 355.2 - 338.6	16.6	(1)															
		(2)															
		(3)															
		(4)															
Bougere 338.6 - 320.4	18.2	(1)															
		(2)															
		(3)															
		(4)															

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

(Sheet 4 of 4)

Table 9

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1968

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico	10.0		(1)*															
616.0 - 606.0			(2)															
			(3)															
			(4)															
Smith Pt.-Terrene	11.8	15	(1)	0.00	5.73	0.30	0.84	0.57	1.12	2.08	8.51	20.62	25.89	18.54	7.24	1.46	0.33	6.75
606.0 - 594.2		1**	(2)	100.00	94.27	93.97	93.12	92.56	91.43	89.35	80.84	60.22	34.33	15.79	8.55	7.09	6.75	0.00
			(3)						100.00	99.86	99.58	98.44	88.12	53.18	17.26	3.96	0.71	0.00
			(4)	100.00	14.02	14.02	12.05	11.44	10.82	10.46	9.72	7.26	0.92	0.31	0.11	0.00		
Terrene-Ozark	13.2	70	(1)	0.00	1.21	1.17	0.71	0.45	0.99	1.69	5.85	20.35	34.32	17.87	7.34	2.31	1.73	4.01
594.2 - 581.0		1**	(2)	100.00	98.79	97.61	96.90	96.45	95.46	93.77	87.92	67.57	33.25	15.39	8.05	5.74	4.01	0.00
			(3)								100.00	99.80	97.93	84.94	82.07	80.30	63.60	0.00
			(4)	100.00	66.54	52.31	47.83	41.15	36.59	32.03	22.80	6.93	0.86	0.32	0.00			
Ozark-Eutaw	15.1	111	(1)	0.00	1.35	2.52	2.07	1.80	2.40	2.17	4.77	18.18	33.01	20.63	6.73	1.59	0.59	2.18
581.0 - 565.9		2**	(2)	100.00	98.65	96.13	94.06	92.26	89.86	87.69	82.92	64.74	31.73	11.10	4.37	2.78	2.19	0.00
includes discharge range			(3)								100.00	99.74	96.02	62.17	32.92	16.97	13.09	0.00
			(4)	100.00	68.35	25.10	21.89	16.95	12.61	11.41	9.72	3.55	0.44	0.13	0.03	0.00		
Choctaw Bar	15.5	75	(1)	0.00	0.59	2.44	1.74	1.23	2.77	2.88	6.72	20.30	35.00	19.50	5.04	0.85	0.36	0.58
565.9 - 550.4		0**	(2)	100.00	99.41	96.97	95.24	94.01	91.23	88.35	81.64	61.33	26.33	6.83	1.79	0.94	0.58	0.00
			(3)								100.00	99.66	97.91	72.98	22.18	12.00	10.07	0.00
			(4)	100.00	72.75	59.22	56.58	45.99	26.17	19.73	7.34	0.99	0.28	0.09	0.00			
Greenville	19.2	104	(1)	0.00	0.56	1.02	0.72	0.62	1.37	1.60	4.94	21.11	31.06	19.04	8.36	2.92	2.04	4.65
550.4 - 531.2		3**	(2)	100.00	99.44	98.42	97.71	97.09	95.72	94.12	89.18	68.07	37.01	17.98	9.61	6.69	4.65	0.00
			(3)								100.00	99.80	99.59	98.26	91.43	77.10	44.99	0.00
			(4)	100.00	79.41	72.69	66.47	63.71	57.53	44.10	29.87	11.60	1.75	0.28	0.00			
Lakeport Towhead	7.0	38	(1)	0.00	0.58	0.72	0.76	0.55	1.26	1.97	5.23	21.75	34.76	22.70	7.98	1.29	0.34	0.11
531.2 - 524.2		0**	(2)	100.00	99.42	98.70	97.94	97.39	96.13	94.16	88.93	67.18	32.42	9.72	1.75	0.45	0.11	0.00
			(3)							100.00	99.94	99.51	96.82	43.57	24.54	9.03	2.08	0.00
			(4)	100.00	87.67	83.90	80.31	79.61	76.60	67.88	40.93	18.88	2.10	0.23	0.05	0.00		

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

(Sheet 1 of 4)

Table 9 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	19.05	9.525	4.699	2.362	Sand 1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	Silt Clay 0.000
				Size of Sieve Opening in mm.														
Kentucky Bend 524.2 - 514.8	9.4	69	(1)*	0.00	1.22	1.96	1.37	0.94	1.34	1.47	4.13	18.74	33.15	19.04	7.94	2.18	1.02	5.48
		3**	(2)	100.00	98.78	96.82	95.45	94.50	93.16	91.68	87.55	68.81	35.66	16.62	8.68	6.51	5.48	0.00
			(3)								100.00	99.81	98.91	95.85	65.94	52.40	38.47	0.00
			(4)	100.00	72.55	51.02	24.73	14.87	7.54	6.53	5.41	3.37	1.88	0.57	0.10	0.00		
Cracraft-Carolina 514.8 - 506.6	8.2	74	(1)	0.00	0.96	2.32	1.35	1.09	2.07	2.42	6.13	19.85	28.86	20.00	10.09	2.74	1.08	1.04
		0**	(2)	100.00	99.04	96.72	95.37	94.29	92.21	89.79	83.66	63.81	34.95	14.95	4.87	2.13	1.04	0.00
			(3)								100.00	99.42	97.67	83.21	51.21	37.53	30.10	0.00
			(4)	100.00	73.53	49.34	32.17	19.74	15.76	14.62	12.92	5.70	0.91	0.16	0.00			
Carolina-Baleshed 506.6 - 495.6	11.0	43	(1)	0.00	2.00	2.40	1.82	1.66	2.92	2.95	6.97	25.18	32.77	14.59	5.02	1.23	0.35	0.13
		0**	(2)	100.00	98.00	95.60	93.77	92.12	89.20	86.25	79.28	54.10	21.33	6.74	1.71	0.48	0.13	0.00
			(3)							100.00	99.94	99.74	78.10	32.90	14.48	4.26	1.43	0.00
			(4)	100.00	36.37	21.78	12.74	9.97	8.12	7.38	6.60	4.55	2.28	0.54	0.00			
Baleshed Landing 495.6 - 485.6	10.0	105	(1)	0.00	0.27	1.48	1.14	0.91	1.61	1.79	4.82	19.09	36.32	22.15	6.05	0.98	0.32	3.10
		3**	(2)	100.00	99.73	98.25	97.11	96.21	94.60	92.81	87.99	68.90	32.59	10.44	4.39	3.42	3.10	0.00
			(3)								100.00	99.37	82.11	35.95	24.19	19.18	10.65	0.00
			(4)	100.00	85.71	68.77	50.73	39.00	19.46	12.10	6.72	3.60	0.40	0.10	0.00			
Ajax Bar 485.6 - 479.8	5.8	55	(1)	0.00	0.90	1.08	0.57	0.29	0.71	0.89	3.19	16.08	34.43	28.24	8.17	1.73	0.86	2.86
		1**	(2)	100.00	99.10	98.02	97.45	97.16	96.45	95.56	92.38	76.30	41.87	13.63	5.45	3.73	2.86	0.00
			(3)								100.00	99.62	98.08	96.09	85.48	68.54	43.77	0.00
			(4)	100.00	60.40	32.56	17.99	14.28	9.84	8.97	7.91	6.56	4.09	0.92	0.19	0.06	0.00	
Ajax-Cottonwood 479.8 - 472.0	7.8	9	(1)		0.00	0.24	0.37	0.38	0.84	1.11	3.02	20.47	42.02	24.52	4.63	0.77	0.41	1.23
		0**	(2)		100.00	99.76	99.39	99.01	98.17	97.06	94.04	73.57	31.56	7.03	2.40	1.63	1.23	0.00
			(3)							100.00	99.68	97.22	68.54	27.92	15.21	12.71	10.42	0.00
			(4)		100.00	97.81	95.84	95.42	94.52	90.39	80.34	54.04	8.84	1.05	0.22	0.11	0.00	
Cottonwood Bar 472.0 - 467.8	4.2	43	(1)	0.00	0.74	1.12	0.56	0.59	1.54	2.47	5.67	14.86	24.49	27.76	11.96	3.76	1.57	2.91
		1**	(2)	100.00	99.26	98.13	97.58	96.99	95.45	92.98	87.32	72.45	47.96	20.20	8.25	4.48	2.91	0.00
			(3)									100.00	99.53	98.74	79.12	39.09	12.45	0.00
			(4)	100.00	86.41	68.29	64.17	62.83	60.72	43.64	9.01	1.60	0.23	0.06	0.00			

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

(Sheet 2 of 4)

Table 9 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cottonwood-Belle Is	6.4	15	(1)*		0.00	0.85	0.47	0.83	3.17	4.21	9.70	17.18	20.56	25.75	12.45	3.38	1.15	0.30
467.8 - 461.4		0**	(2)		100.00	99.15	98.68	97.85	94.68	90.47	80.76	63.58	43.03	17.27	4.83	1.45	0.30	0.00
			(3)								100.00	99.84	97.46	58.81	21.96	6.75	1.14	0.00
			(4)		100.00	93.78	89.53	82.36	53.17	34.14	17.26	9.90	3.42	0.80	0.13	0.00		
Belle Is-Milliken	9.6	18	(1)	0.00	0.48	0.48	0.57	0.74	1.47	2.35	7.28	23.06	34.87	17.65	6.66	2.78	1.15	0.48
461.4 - 451.8		0**	(2)	100.00	99.52	99.04	98.48	97.74	96.27	93.92	86.64	63.58	28.71	11.06	4.40	1.62	0.48	0.00
			(3)								100.00	99.77	99.61	98.77	55.32	23.19	6.70	0.00
			(4)	100.00	91.35	86.27	82.71	78.81	70.59	58.01	34.16	5.80	0.71	0.14	0.05	0.00		
Milliken-Vicksburg	16.8	89	(1)	0.00	0.13	0.65	0.58	0.54	1.17	1.57	5.64	22.34	32.15	18.33	8.43	1.60	0.77	6.11
451.8 - 435.0		5**	(2)	100.00	99.87	99.22	98.64	98.10	96.93	95.36	89.72	67.38	35.23	16.90	8.47	6.87	6.10	0.00
Includes discharge range			(3)									100.00	99.35	95.79	88.26	70.65	34.11	0.00
			(4)	100.00	93.76	87.79	80.32	70.33	57.13	44.36	22.22	2.50	0.60	0.12	0.00			
Racetrack-Towhead	12.2	4	(1)			0.00	0.06	0.59	0.99	2.16	7.55	15.71	32.17	31.95	7.96	0.74	0.13	0.00
435.0 - 422.8		0**	(2)			100.00	99.94	99.35	98.36	96.20	88.66	72.95	40.78	8.83	0.87	0.13	0.00	
			(3)							100.00	99.87	97.72	65.56	15.70	13.92	1.65	0.14	0.00
			(4)			100.00	99.77	98.56	96.33	90.71	73.62	46.33	19.37	2.36	1.96	0.26	0.11	0.00
Pt. Pleasant	15.4		(1)															
422.8 - 407.4			(2)															
			(3)															
			(4)															
Grand Gulf	12.2		(1)															
407.4 - 395.2			(2)															
			(3)															
			(4)															
Rodney	13.8	52	(1)	0.00	0.35	0.69	0.42	0.34	0.53	1.29	5.89	16.48	27.20	31.17	10.94	3.03	1.10	0.56
395.2 - 381.4		0**	(2)	100.00	99.65	98.96	98.54	98.20	97.67	96.38	90.49	74.01	46.81	15.64	4.69	1.66	0.56	0.00
			(3)								100.00	99.83	99.24	64.34	36.78	21.95	16.58	0.00
			(4)	100.00	81.81	71.47	68.60	66.43	64.98	60.26	39.82	12.11	2.49	0.96	0.25	0.05	0.00	

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 9 (Concluded)

Reach	Reach	No. of	Gravel				Sand										Silt
Mile AHP	Length	Samples	Size of Sieve Opening in mm.														Clay
	in Mi.		38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Waterproof	13.2	(1)*															
381.4 - 368.2		(2)															
		(3)															
		(4)															
Natchez	13.0	(1)															
368.2 - 355.2		(2)															
Includes discharge range		(3)															
		(4)															
St. Catherine	16.6	(1)															
355.2 - 338.6		(2)															
		(3)															
		(4)															
Bougere	18.2	(1)															
338.6 - 320.4		(2)															
		(3)															
		(4)															

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

Table 10

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1969

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand										Silt Clay
				Size of Sieve Opening in mm.															
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico 616.0 - 606.0	10.0		(1)*															
			(2)															
			(3)															
			(4)															
Smith Pt.-Terrene 606.0 - 594.2	11.8	136	(1)	0.00	0.72	1.52	0.66	0.77	1.52	2.24	7.59	25.45	26.41	17.05	8.63	2.92	1.10	3.41
		4**	(2)	100.00	99.28	97.76	97.10	96.33	94.80	92.56	84.97	59.52	33.11	16.06	7.43	4.51	3.41	0.00
			(3)								100.00	99.94	99.61	99.04	91.50	44.52	15.51	0.00
			(4)	100.00	15.02	2.04	1.33	1.16	1.07	0.98	0.89	0.62	0.53	0.00				
Terrene-Ozark 594.2 - 581.0	13.2	55	(1)	0.00	0.22	0.57	0.35	0.31	0.63	1.28	5.26	23.02	35.87	20.19	6.63	1.75	1.58	2.31
		0**	(2)	100.00	99.78	99.21	98.85	98.54	97.91	96.63	91.36	68.34	32.47	12.27	5.64	3.89	2.31	0.00
			(3)								100.00	99.54	98.99	98.29	94.87	82.59	47.14	0.00
			(4)	100.00	92.73	90.32	88.24	85.67	75.82	62.94	38.27	12.35	2.29	0.37	0.04	0.00		
Ozark-Eutaw 581.0 - 565.9 includes discharge range	15.1	76	(1)	0.00	0.11	2.39	1.34	1.23	2.24	2.57	5.96	19.38	31.13	18.95	7.11	2.66	0.77	4.18
		3**	(2)	100.00	99.89	97.50	96.16	94.93	92.69	90.12	84.16	64.78	33.65	14.70	7.59	4.93	4.16	0.00
			(3)								100.00	99.86	98.47	92.36	62.41	17.09	5.14	0.00
			(4)	100.00	95.28	38.83	28.16	24.27	19.42	15.05	11.17	3.47	0.58	0.23	0.00			
Choctaw Bar 565.9 - 550.4	15.5	109	(1)	0.00	1.78	1.83	1.17	0.90	1.20	1.46	4.38	19.23	35.30	19.80	7.61	1.97	0.97	2.40
		2**	(2)	100.00	98.22	96.39	95.22	94.32	93.12	91.66	87.28	68.05	32.75	12.95	5.34	3.37	2.40	0.00
			(3)									100.00	99.75	97.20	67.86	48.05	25.84	0.00
			(4)	100.00	34.26	16.12	4.50	2.17	1.40	1.09	0.78	0.31	0.00					
Greenville 550.4 - 531.2	19.2	123	(1)	0.00	0.20	0.77	0.53	0.57	1.10	1.53	4.94	19.98	33.79	20.05	8.80	2.06	0.90	4.79
		5**	(2)	100.00	99.80	99.04	98.51	97.94	96.84	95.31	90.37	70.39	36.60	16.54	7.75	5.69	4.79	0.00
			(3)									100.00	99.80	97.32	83.54	51.52	30.62	0.00
			(4)	100.00	89.86	85.96	83.62	73.20	53.23	37.52	23.92	12.43	1.58	0.29	0.10	0.00		
Lakeport Towhead 531.2 - 524.2	7.0	41	(1)	0.00	1.49	1.48	1.23	0.78	1.32	1.75	4.47	14.64	28.68	20.74	8.10	3.83	4.47	7.02
		0**	(2)	100.00	98.51	97.03	95.80	95.02	93.69	91.75	87.48	72.84	44.17	23.42	15.32	11.49	7.02	0.00
			(3)								100.00	99.75	99.16	94.29	86.38	72.25	49.52	0.00
			(4)	100.00	43.75	43.75	39.25	39.00	38.25	36.75	31.50	12.06	1.80	0.17	0.00			

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

(Sheet 1 of 4)

Table 10 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Kentucky Bend	9.4	75	(1)*	0.00	0.80	0.74	0.63	0.57	1.06	1.62	5.63	21.58	36.26	20.57	6.50	1.07	0.23	2.74
524.2 - 514.8		2**	(2)	100.00	99.20	98.46	97.83	97.25	96.20	94.57	88.94	67.37	31.11	10.53	4.04	2.97	2.74	0.00
			(3)								100.00	99.73	97.28	75.78	16.71	2.86	1.11	0.00
			(4)	100.00	71.04	58.65	52.51	49.70	47.25	44.44	36.00	14.00	2.50	0.29	0.06	0.00		
Cracraft-Carolina	8.2	58	(1)	0.00	0.24	1.08	0.63	0.61	1.42	1.86	4.76	15.82	30.94	27.28	11.89	2.25	0.66	0.57
514.8 - 506.6		0**	(2)	100.00	99.76	98.68	98.05	97.45	96.03	94.17	89.41	73.58	42.65	15.37	3.48	1.23	0.57	0.00
			(3)								100.00	99.85	96.18	71.16	36.51	27.69	17.11	0.00
			(4)	100.00	85.95	80.75	79.27	78.57	54.44	26.40	5.37	0.88	0.22	0.11	0.00			
Carolina-Baleshed	11.0	35	(1)	0.00	0.70	1.82	1.56	1.41	2.27	2.82	7.40	23.57	37.08	15.44	4.92	0.80	0.17	0.04
506.6 - 495.6		0**	(2)	100.00	99.30	97.47	95.92	94.51	92.24	89.42	82.02	58.45	21.37	5.93	1.01	0.21	0.04	0.00
			(3)							100.00	99.91	98.17	61.50	22.65	4.58	0.92	0.12	0.00
			(4)	100.00	84.93	70.21	48.63	35.59	22.22	15.94	10.63	4.35	1.29	0.61	0.11	0.00		
Baleshed Landing	10.0	59	(1)	0.00	0.67	0.93	0.94	0.99	1.48	1.34	3.95	17.63	38.12	21.69	7.93	2.48	1.14	0.68
495.6 - 485.6		0**	(2)	100.00	99.31	98.38	97.43	96.44	94.97	93.63	89.67	72.04	33.92	12.23	4.30	1.82	0.68	0.00
			(3)								100.00	99.84	98.52	92.85	81.97	55.59	26.89	0.00
			(4)	100.00	74.24	66.49	53.56	37.07	18.22	9.76	4.86	2.88	0.98	0.36	0.10	0.00		
Ajax Bar	5.8	29	(1)	0.00	0.74	1.07	0.61	0.30	0.48	0.55	1.71	10.63	33.22	24.30	10.64	4.98	3.39	7.38
485.6 - 479.8		1**	(2)	100.00	99.26	98.19	97.58	97.28	96.80	96.25	94.54	83.91	50.69	26.39	15.74	10.76	7.38	0.00
			(3)								100.00	99.82	98.77	97.55	89.38	78.22	57.56	0.00
			(4)	100.00	78.55	48.06	31.52	24.67	16.36	11.64	6.55	2.42	1.27	0.64	0.18	0.00		
Ajax-Cottonwood	7.8	33	(1)		0.00	0.30	0.54	0.51	1.04	1.69	5.12	19.97	26.20	25.67	8.68	2.89	2.19	5.20
479.8 - 472.0		1**	(2)		100.00	99.70	99.16	98.65	97.61	95.92	90.80	70.83	44.63	18.96	10.28	7.39	5.20	0.00
			(3)								100.00	99.79	98.06	96.46	88.58	69.06	34.82	0.00
			(4)		100.00	94.31	92.75	91.58	84.49	74.92	50.83	12.21	1.40	0.25	0.08	0.00		
Cottonwood Bar	4.2	62	(1)	0.00	0.54	1.09	0.56	0.51	0.91	1.49	4.28	16.85	33.88	25.87	10.07	2.56	0.92	0.47
472.0 - 467.8		0**	(2)	100.00	99.46	98.36	97.80	97.29	96.39	94.90	90.62	73.76	39.89	14.02	3.95	1.39	0.47	0.00
			(3)									100.00	99.05	90.74	60.81	47.97	22.97	0.00
			(4)	100.00	74.84	51.82	44.05	41.19	40.36	39.31	34.96	12.12	2.84	0.70	0.08	0.00		

(Continued)

(Sheet 2 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 10 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Size of Sieve Opening in [illegible]									Silt Clay
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	[illegible]	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cottonwood-Belle Is	6.4	3	(1)*			0.00	0.15	0.14	0.97	0.87	1.08	9.23	31.33	35.74	15.59	4.27	0.53	0.10
467.8 - 461.4		0**	(2)			100.00	99.85	99.72	98.75	97.88	96.80	87.56	56.24	20.50	4.90	0.63	0.10	0.00
			(3)					100.00	99.91	99.83	99.66	98.63	93.68	35.64	8.55	0.92	0.15	0.00
			(4)			100.00	99.67	99.49	96.66	94.19	91.62	78.83	26.32	4.11	0.56	0.11	0.06	0.00
Belle Is-Milliken	9.6	27	(1)		0.00	0.62	0.56	0.66	2.07	2.50	6.82	22.37	34.42	16.52	5.73	2.36	1.03	4.34
461.4 - 451.8		1**	(2)		100.00	99.38	98.83	98.17	96.10	93.60	86.78	64.41	29.99	13.47	7.74	5.38	4.34	0.00
			(3)								100.00	99.77	99.26	92.12	52.57	25.51	9.30	0.00
			(4)		100.00	85.93	82.37	81.63	59.22	39.64	24.68	12.13	2.84	0.69	0.17	0.06	0.00	
Milliken-Vicksburg	16.8	89	(1)	0.00	0.25	0.84	1.03	1.12	1.95	2.78	7.93	25.77	30.44	15.10	6.42	2.39	1.18	2.80
451.8 - 435.0		1**	(2)	100.00	99.75	98.91	97.88	96.76	94.81	92.03	84.10	58.33	27.89	12.79	6.37	3.98	2.80	0.00
Includes discharge range			(3)								100.00	99.78	97.42	92.76	79.58	41.45	17.10	0.00
			(4)	100.00	89.82	88.49	71.52	55.86	42.38	36.00	18.47	6.70	1.67	0.27	0.05	0.00		
Racetrack-Towhead	12.2	8	(1)	0.00	6.63	4.86	1.57	1.62	2.25	2.17	6.41	22.47	34.77	13.08	3.32	0.65	0.17	0.02
435.0 - 422.8		0**	(2)	100.00	93.37	88.51	86.94	85.32	83.06	80.90	74.49	52.01	17.24	4.16	0.85	0.19	0.02	0.00
			(3)					100.00	99.85	99.77	98.95	88.49	26.63	9.38	2.18	0.44	0.07	0.00
			(4)	100.00	46.93	46.93	46.93	46.93	46.93	46.66	37.28	18.93	5.71	1.21	0.23	0.06	0.00	
Pt. Pleasant	15.4		(1)															
422.8 - 407.4			(2)															
			(3)															
			(4)															
Grand Gulf	12.2		(1)															
407.4 - 395.2			(2)															
			(3)															
			(4)															
Rodney	13.8	107	(1)	0.00	0.50	1.34	1.30	0.91	1.15	1.51	5.71	18.35	27.58	25.87	11.91	2.66	0.68	0.54
395.2 - 381.4		0**	(2)	100.00	99.50	98.17	96.87	95.96	94.81	93.29	87.59	69.23	41.66	15.78	3.87	1.21	0.54	0.00
			(3)								100.00	99.70	98.68	95.68	36.37	29.23	24.98	0.00
			(4)	100.00	81.67	59.50	38.70	26.74	20.22	17.93	14.13	9.45	1.30	0.49	0.10	0.00		

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

(Sheet 3 of 4)

Table 10 (Concluded)

Reach Mile AHP	Reach Length in Mi.	No. of Samples	Gravel				Sand										Silt Clay
			Size of Sieve Opening in mm.														
			38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Waterproof	13.2	(1)*															
381.4 - 368.2		(2)															
		(3)															
		(4)															
Natchez	13.0	(1)															
368.2 - 355.2		(2)															
Includes discharge range		(3)															
		(4)															
St. Catherine	16.6	(1)															
355.2 - 338.6		(2)															
		(3)															
		(4)															
Bougere	18.2	(1)															
338.6 - 320.4		(2)															
		(3)															
		(4)															

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

(Sheet 4 of 4)

Table 11

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1970

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico 616.0 - 606.0	10.0		(1)*															
			(2)															
			(3)															
			(4)															
Smith Pt.-Terrene 606.0 - 594.2	11.8	29	(1)	0.00	2.50	2.28	1.40	1.03	1.39	2.12	7.64	23.58	27.64	14.96	4.05	0.85	0.14	10.41
		3**	(2)	100.00	97.50	95.21	93.81	92.78	91.38	89.26	81.62	58.05	30.41	15.44	11.39	10.55	10.41	0.00
			(3)						100.00	99.93	99.39	92.34	65.79	29.26	6.36	1.21	0.22	0.00
			(4)	100.00	60.34	39.77	29.16	23.41	20.13	18.11	14.55	7.55	2.52	0.05	0.00			
Terrene-Ozark 594.2 - 581.0	13.2	44	(1)		0.00	0.10	0.46	0.25	0.56	1.42	5.83	22.10	28.74	19.65	10.13	3.03	1.67	6.05
		2**	(2)		100.00	99.90	99.44	99.19	98.63	97.21	91.37	69.28	40.54	20.89	10.75	7.73	6.05	0.00
			(3)								100.00	99.93	99.85	99.24	98.11	81.36	36.02	0.00
			(4)		100.00	97.66	92.64	92.18	87.23	80.57	49.28	7.98	3.65	0.64	0.13	0.05	0.00	
Ozark-Eutaw 581.0 - 565.9 includes discharge range	15.1	91	(1)	0.00	0.78	1.40	1.50	1.57	1.89	1.77	4.19	18.31	38.55	21.90	5.85	1.38	0.61	0.33
		0**	(2)	100.00	99.22	97.82	96.32	94.75	92.86	91.09	86.90	68.59	30.04	8.14	2.29	0.91	0.30	0.00
			(3)								100.00	99.81	98.75	98.23	93.37	58.92	21.00	0.00
			(4)	100.00	70.95	64.25	43.44	23.60	13.68	10.27	7.11	3.13	0.45	0.13	0.00			
Choctaw Bar 565.9 - 550.4	15.5	76	(1)	0.00	1.09	1.70	1.19	1.16	1.36	1.65	4.87	18.78	33.13	23.30	7.89	2.24	0.81	0.83
		0**	(2)	100.00	98.91	97.22	96.03	94.87	93.50	91.86	86.99	68.20	35.07	11.77	3.88	1.64	0.83	0.00
			(3)								100.00	99.86	99.28	91.28	74.29	53.71	27.77	0.00
			(4)	100.00	56.97	31.32	19.61	13.75	12.42	11.89	11.09	7.81	1.79	0.07	0.00			
Greenville 550.4 - 531.2	19.2	54	(1)	0.00	0.11	0.54	0.70	0.79	1.47	2.07	5.36	18.61	32.83	18.50	8.93	3.29	0.66	6.14
		3**	(2)	100.00	99.89	99.35	98.65	97.86	96.39	94.32	88.96	70.35	37.52	19.02	10.09	6.80	6.14	0.00
			(3)							100.00	99.87	98.96	96.63	81.39	35.31	28.19	20.84	0.00
			(4)	100.00	93.96	88.80	88.14	82.82	74.04	61.99	34.43	10.44	2.26	0.41	0.09	0.00		
Lakeport Towhead 531.2 - 524.2	7.0	19	(1)		0.00	1.51	1.01	1.33	1.70	1.85	4.99	16.67	28.42	22.38	8.27	3.28	1.86	6.73
		1**	(2)		100.00	98.49	97.49	96.15	94.45	92.60	87.61	70.94	42.52	20.14	11.87	8.59	6.73	0.00
			(3)								100.00	99.62	95.97	89.79	75.56	55.97	26.34	0.00
			(4)		100.00	89.03	80.54	66.62	50.67	40.85	28.91	13.79	2.58	0.51	0.09	0.00		

(Continued)

(Sheet 1 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 11 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	19.05	9.525	4.699	2.362	Sand (Size of Sieve Opening in mm.) 1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	Silt Clay 0.000
Kentucky Bend 524.2 - 514.8	9.4	52	(1)*	0.00	1.39	2.01	1.87	1.41	2.11	2.72	7.22	24.00	31.45	15.03	6.74	2.21	0.83	1.01
		0**	(2)	100.00	98.61	96.60	94.73	93.31	91.21	88.49	81.27	57.27	25.82	10.79	4.05	1.83	1.01	0.00
			(3)								100.00	99.17	98.53	96.91	70.42	37.37	24.70	0.00
			(4)	100.00	57.84	23.19	9.00	3.41	2.18	1.77	1.36	0.95	0.41	0.14	0.00			
Cracraft-Carolina 514.8 - 506.6	8.2	18	(1)		0.00	1.55	0.70	0.19	0.28	0.46	1.71	11.41	35.35	35.02	11.55	1.58	0.15	0.04
		0**	(2)		100.00	98.45	97.75	97.56	97.28	96.81	95.10	83.69	48.33	13.32	1.77	0.19	0.04	0.00
			(3)							100.00	99.92	99.39	87.59	32.70	4.24	0.40	0.18	0.00
			(4)		100.00	78.04	74.29	73.39	72.14	70.36	64.82	41.25	6.79	0.62	0.09	0.00		
Carolina-Baleshed 506.6 - 495.6	11.0	11	(1)		0.00	0.64	0.58	0.31	0.51	1.23	4.97	19.35	28.69	26.83	9.88	2.57	1.98	2.47
		0**	(2)		100.00	99.36	98.78	98.47	97.96	96.73	91.77	72.41	43.72	16.90	7.02	4.45	2.47	0.00
			(3)							100.00	99.15	95.42	76.80	59.86	34.80	26.57	16.82	0.00
			(4)		100.00	93.97	91.88	91.72	91.64	91.48	77.79	41.03	12.48	2.24	0.33	0.07	0.00	
Baleshed Landing 495.6 - 485.6	10.0	43	(1)	0.00	0.37	1.04	1.04	0.61	0.97	1.69	5.83	20.03	34.40	21.46	8.88	2.99	0.59	0.09
		0**	(2)	100.00	99.63	98.59	97.55	96.94	95.97	94.28	88.45	68.42	34.02	12.56	3.67	0.69	0.09	0.00
			(3)								100.00	99.75	95.73	90.68	50.87	9.71	1.17	0.00
			(4)	100.00	83.97	82.26	55.38	45.70	41.94	35.48	19.89	6.99	2.59	0.96	0.00			
Ajax Bar 485.6 - 479.8	5.8	23	(1)		0.00	0.18	0.27	0.25	0.46	0.76	2.97	15.20	33.60	23.33	10.38	5.01	2.06	5.56
		1**	(2)		100.00	99.82	99.56	99.31	98.85	98.09	95.12	79.93	46.33	23.00	12.63	7.62	5.56	0.00
			(3)								100.00	99.56	97.64	96.14	84.98	55.90	23.61	0.00
			(4)		100.00	95.96	93.76	92.84	90.91	86.67	72.96	45.26	10.97	0.74	0.10	0.00		
Ajax-Cottonwood 479.8 - 472.0	7.8	15	(1)		0.00	0.35	0.38	0.40	0.90	1.53	5.50	17.61	31.58	23.18	4.02	1.01	0.13	13.39
		2**	(2)		100.00	99.65	99.27	98.87	97.97	96.44	90.93	73.32	41.74	18.56	14.53	13.52	13.39	0.00
			(3)						100.00	99.91	99.56	96.09	60.85	13.74	4.35	0.59	0.13	0.00
			(4)		100.00	94.72	91.40	86.49	76.26	67.25	45.13	10.07	0.49	0.16	0.08	0.00		
Cottonwood Bar 472.0 - 467.8	4.2	17	(1)	0.00	0.25	0.46	0.92	1.30	1.84	1.91	4.42	15.58	15.03	25.19	23.55	7.99	1.40	0.15
		0**	(2)	100.00	99.75	99.29	98.36	97.06	95.22	93.31	88.89	73.31	58.28	33.09	9.54	1.55	0.15	0.00
			(3)								100.00	99.84	99.42	92.73	33.71	6.24	0.35	0.00
			(4)	100.00	95.71	94.25	87.04	71.05	50.93	35.21	17.96	7.01	2.23	0.35	0.09	0.00		

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 11 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	19.05	9.525	4.699	2.362	Sand 1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	Silt Clay 0.000
				Size of Sieve Opening in mm.														
Cottonwood-Belle Is	6.4	5	(1)*	0.00	2.39	1.54	2.07	1.68	3.90	5.88	11.35	16.65	11.76	23.91	14.64	3.69	0.42	0.12
467.8 - 461.4		0**	(2)	100.00	97.61	96.07	94.00	92.32	88.42	82.54	71.19	54.54	42.79	18.87	4.23	0.54	0.12	0.00
			(3)								100.00	99.57	98.26	71.52	16.67	2.17	0.51	0.00
			(4)	100.00	88.03	84.17	78.64	77.22	73.36	65.00	48.20	19.49	3.15	0.79	0.17	0.00		
Belle Is-Milliken	9.6	11	(1)		0.00	1.33	0.59	0.58	1.22	1.56	4.89	23.51	32.50	15.48	5.85	2.52	0.66	9.30
461.4 - 451.8		1**	(2)		100.00	98.67	98.08	97.50	96.28	94.72	89.89	66.32	33.81	18.33	12.49	9.97	9.30	0.00
			(3)							100.00	99.75	98.14	86.08	64.05	33.67	8.95	1.77	0.00
			(4)		100.00	93.42	91.30	87.89	76.18	64.62	47.05	18.77	3.15	0.26	0.05	0.00		
Milliken-Vicksburg	16.8	80	(1)	0.00	2.00	3.13	2.01	2.26	2.67	2.98	7.81	22.25	31.39	15.06	5.42	1.48	0.21	1.35
451.8 - 435.0		1**	(2)	100.00	98.00	94.87	92.86	90.60	87.93	84.95	77.14	54.89	23.50	8.44	3.02	1.54	1.33	0.00
Includes discharge range			(3)							100.00	99.81	99.27	94.25	86.99	22.27	4.09	3.33	0.00
			(4)	100.00	21.62	5.28	3.28	2.96	2.80	2.64	1.99	0.80	0.18	0.04	0.00			
Racetrack-Towhead	12.2	8	(1)	0.00	0.96	2.34	0.88	1.13	1.66	1.78	4.80	14.66	29.91	30.21	9.83	1.52	0.26	0.05
435.0 - 422.8		0**	(2)	100.00	99.04	96.70	95.82	94.69	93.02	91.24	86.44	71.78	41.87	11.66	1.82	0.31	0.05	0.00
			(3)								100.00	99.70	90.58	21.41	3.47	0.79	0.20	0.00
			(4)	100.00	92.32	85.03	85.03	84.70	83.02	73.58	57.98	29.82	7.78	1.51	0.38	0.09	0.00	
Pt. Pleasant	15.4	104	(1)	0.00	1.75	2.65	1.55	1.20	1.35	1.96	6.93	21.00	24.34	19.50	8.57	4.23	1.87	3.11
422.8 - 407.4		2**	(2)	100.00	98.25	95.60	94.05	92.86	91.51	89.55	82.62	61.62	37.28	17.78	9.21	4.98	3.11	0.00
			(3)								100.00	99.94	99.57	98.63	93.37	71.07	51.57	0.00
			(4)	100.00	64.24	24.31	17.13	12.98	11.60	10.77	9.67	6.77	1.40	0.13	0.00			
Grand Gulf	12.2	57	(1)		0.00	0.31	0.15	0.15	0.18	0.43	3.58	16.53	30.72	29.68	10.05	2.66	1.15	4.42
407.4 - 395.2		2**	(2)		100.00	99.69	99.54	99.39	99.21	98.78	95.20	78.67	47.96	18.28	8.23	5.57	4.42	0.00
			(3)								100.00	99.88	99.64	98.91	94.12	80.36	44.43	0.00
			(4)		100.00	91.17	91.08	90.33	88.64	86.67	70.61	32.87	4.10	0.32	0.06	0.00		
Rodney	13.8	90	(1)	0.00	0.95	0.90	0.84	1.07	1.75	2.52	8.31	21.60	23.49	22.74	9.92	2.97	0.60	2.33
395.2 - 381.4		2**	(2)	100.00	99.05	98.15	97.30	96.24	94.48	91.96	83.65	62.05	38.56	15.82	5.90	2.93	2.33	0.00
			(3)								100.00	99.75	97.74	85.67	33.96	9.27	2.43	0.00
			(4)	100.00	45.75	43.40	43.40	43.40	41.27	36.32	22.88	6.37	0.45	0.00				

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 11 (Concluded)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Waterproof 381.4 - 368.2	13.2	63	(1)*	0.00	0.38	0.27	0.25	0.22	0.25	0.40	2.11	9.85	22.21	35.43	16.24	6.71	2.01	3.64
		0**	(2)	100.00	99.62	99.35	99.09	98.87	98.62	98.21	96.10	86.25	64.03	28.60	12.36	5.65	3.64	0.00
			(3)									100.00	99.89	98.03	91.62	55.38	14.46	0.00
			(4)	100.00	76.06	72.38	70.60	70.04	69.38	66.26	45.10	12.58	6.01	0.70	0.09	0.00		
Natchez 368.2 - 355.2 Includes discharge range	13.0	76	(1)		0.00	0.26	0.45	0.56	0.69	0.90	3.90	17.15	31.67	28.52	10.66	2.07	0.40	2.77
		2**	(2)		100.00	99.74	99.29	98.73	98.04	97.14	93.24	76.09	44.42	15.90	5.24	3.17	2.77	0.00
			(3)									100.00	99.37	54.58	12.20	5.39	2.82	0.00
			(4)		100.00	89.10	87.62	84.94	77.54	71.74	58.21	23.64	4.42	1.10	0.22	0.00		
St. Catherine 355.2 - 338.6	16.6		(1)															
			(2)															
			(3)															
			(4)															
Bougere 338.6 - 320.4	18.2		(1)															
			(2)															
			(3)															
			(4)															

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 12

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1971

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico	10.0		(1)*															
616.0 - 606.0			(2)															
			(3)															
			(4)															
Smith Pt.-Terrene	11.8	28	(1)		0.00	0.57	0.77	0.46	0.68	1.60	7.23	18.85	29.27	23.72	8.43	1.14	0.08	7.21
606.0 - 594.2		2**	(2)		100.00	99.43	98.66	98.20	97.52	95.92	88.69	69.85	40.58	16.86	8.43	7.29	7.21	0.00
			(3)								100.00	99.82	96.75	73.29	9.39	1.03	0.52	0.00
			(4)		100.00	91.90	90.69	89.18	85.77	77.79	53.96	26.79	3.10	0.43	0.00			
Terrene-Ozark	13.2	23	(1)		0.00	0.58	0.39	0.88	1.61	2.34	5.29	13.46	27.20	24.89	12.40	5.47	0.85	4.66
594.2 - 581.0		1**	(2)		100.00	99.42	99.04	98.16	96.55	94.21	88.93	75.47	48.27	23.38	10.98	5.51	4.66	0.00
			(3)								100.00	99.23	98.34	94.92	61.58	11.16	2.87	0.00
			(4)		100.00	93.49	91.16	86.21	78.71	63.00	32.56	16.90	4.03	0.78	0.23	0.00		
Ozark-Eutaw	15.1	66	(1)	0.00	0.25	0.24	0.22	0.36	0.60	1.14	4.90	18.31	39.81	25.66	6.77	1.39	0.23	0.12
581.0 - 565.9		0**	(2)	100.00	99.75	99.51	99.29	98.93	98.33	97.19	92.29	73.98	34.17	8.51	1.74	0.35	0.12	0.00
includes discharge range			(3)									100.00	97.07	30.99	14.40	4.83	1.61	0.00
			(4)	100.00	91.83	89.32	85.79	82.98	76.50	64.10	38.30	11.64	1.58	0.48	0.05	0.00		
Choctaw Bar	15.5	23	(1)		0.00	1.14	0.83	0.92	0.89	1.07	4.44	21.78	37.57	18.40	6.17	1.68	1.96	3.13
565.9 - 550.4		0**	(2)		100.00	98.86	98.03	97.11	96.21	95.14	90.70	68.92	31.35	12.95	6.78	5.09	3.13	0.00
			(3)							100.00	99.83	99.40	98.79	98.09	96.08	85.11	52.82	0.00
			(4)		100.00	86.36	80.00	73.41	68.14	62.95	52.02	24.80	4.65	0.49	0.00			
Greenville	19.2	49	(1)	0.00	0.54	0.59	0.66	0.78	1.22	1.86	6.80	22.20	39.01	18.17	5.33	1.20	0.64	0.97
550.4 - 531.2		0**	(2)	100.00	99.46	98.86	98.20	97.42	96.20	94.33	87.53	65.33	26.32	8.15	2.82	1.62	0.97	0.00
			(3)								100.00	97.82	91.35	77.28	60.44	47.64	27.45	0.00
			(4)	100.00	81.28	81.28	81.18	80.85	80.47	73.66	56.67	21.61	4.58	0.41	0.08	0.00		
Lakeport Towhead	7.0	24	(1)	0.00	0.35	0.37	0.54	0.50	0.96	1.60	5.54	19.80	40.78	20.26	7.26	1.70	0.22	0.12
531.2 - 524.2		0**	(2)	100.00	99.65	99.28	98.74	98.24	97.28	95.68	90.15	70.34	29.56	9.30	2.04	0.34	0.12	0.00
			(3)							100.00	99.95	97.59	81.96	49.78	16.30	3.46	0.93	0.00
			(4)	100.00	91.64	88.92	87.26	86.01	75.65	65.42	47.31	21.94	3.58	0.29	0.05	0.00		

(Continued)

(Sheet 1 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 12 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Kentucky Bend 524.2 - 514.8	9.4	68 0**	(1)*	0.00	0.40	1.47	1.21	1.54	2.68	2.98	7.15	22.24	34.85	17.88	5.40	1.30	0.49	0.43
			(2)	100.00	99.60	98.13	96.92	95.38	92.70	89.72	82.58	60.34	25.49	7.62	2.22	0.92	0.43	0.00
			(3)							100.00	99.85	98.99	89.77	80.69	54.14	26.55	9.08	0.00
			(4)	100.00	72.64	70.10	69.13	60.15	48.81	43.77	33.57	12.71	2.42	0.16	0.06	0.00		
Cracraft-Carolina 514.8 - 506.6	8.2	38 1**	(1)		0.00	0.16	0.52	0.62	1.09	1.76	4.80	16.75	34.60	23.05	8.41	2.81	1.17	4.25
			(2)		100.00	99.84	99.32	98.71	97.61	95.86	91.05	74.30	39.70	16.65	8.23	5.42	4.25	0.00
			(3)								100.00	99.73	94.85	75.26	49.84	45.25	31.24	0.00
			(4)		100.00	96.56	95.65	92.07	76.13	48.20	16.76	3.65	1.94	0.81	0.12	0.00		
Carolina-Baleshed 506.6 - 495.6	11.0	27 0**	(1)		0.00	0.63	0.24	0.43	0.77	1.41	4.20	12.75	29.50	26.84	13.60	6.52	2.66	0.44
			(2)		100.00	99.37	99.13	98.70	97.93	96.52	92.32	79.57	50.07	23.23	9.63	3.11	0.44	0.00
			(3)								100.00	99.48	98.96	95.43	68.34	23.55	4.25	0.00
			(4)		100.00	86.32	84.47	80.77	77.07	72.22	62.68	32.01	9.06	0.36	0.00			
Baleshed Landing 495.6 - 485.6	10.0	78 0**	(1)	0.00	0.49	1.21	0.54	0.78	1.36	1.78	4.60	13.84	27.80	20.48	15.58	6.19	1.65	3.71
			(2)	100.00	99.51	98.30	97.76	96.98	95.63	93.85	89.25	75.41	47.61	27.14	11.55	5.36	3.71	0.00
			(3)									100.00	99.78	97.91	64.38	30.34	23.60	0.00
			(4)	100.00	85.49	79.12	74.07	69.36	66.76	62.78	50.19	17.98	5.16	1.46	0.15	0.00		
Ajax Bar 485.6 - 479.8	5.8	37 1**	(1)		0.00	0.09	0.25	0.31	0.73	1.24	4.42	15.12	28.80	27.03	14.52	3.70	0.55	3.25
			(2)		100.00	99.91	99.66	99.35	98.62	97.38	92.96	77.84	49.04	22.02	7.50	3.80	3.25	0.00
			(3)								100.00	99.82	95.87	88.03	35.55	13.36	11.21	0.00
			(4)		100.00	97.93	97.49	96.12	91.89	85.20	72.48	44.83	9.73	1.11	0.11	0.00		
Ajax-Cottonwood 479.8 - 472.0	7.8	29 1**	(1)	0.00	1.25	2.17	1.11	1.51	2.32	2.73	7.00	16.97	24.44	17.06	12.32	5.53	1.60	4.00
			(2)	100.00	98.75	96.58	95.47	93.96	91.65	88.92	81.91	64.95	40.51	23.45	11.13	5.60	4.00	0.00
			(3)							100.00	99.69	99.19	98.67	89.87	72.08	32.21	8.44	0.00
			(4)	100.00	89.82	62.85	57.30	53.06	50.77	49.40	35.55	5.50	0.75	0.17	0.00			
Cottonwood Bar 472.0 - 467.8	4.2	29 0**	(1)	0.00	0.84	0.54	0.27	0.32	0.54	0.96	3.70	16.68	35.20	23.46	11.62	4.08	1.41	0.39
			(2)	100.00	99.16	98.62	98.35	98.04	97.49	96.53	92.83	76.16	40.95	17.50	5.88	1.80	0.39	0.00
			(3)									100.00	98.87	82.67	51.10	22.09	5.25	0.00
			(4)	100.00	75.54	68.97	64.50	60.98	56.57	50.41	36.45	18.43	3.38	0.22	0.08	0.00		

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 12 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	Gravel 19.05	Gravel 9.525	Gravel 4.699	Gravel 2.362	Sand 1.168	Sand 0.833	Sand 0.589	Sand 0.417	Sand 0.295	Sand 0.208	Sand 0.147	Sand 0.104	Sand 0.074	Silt Clay 0.000
				Size of Sieve Opening in mm.														
Cottonwood-Belle Is	6.4	12	(1)*	0.00	1.11	6.82	4.24	2.61	1.64	1.77	5.35	13.74	28.19	23.69	8.96	1.55	0.22	0.11
467.8 - 461.4		0**	(2)	100.00	98.89	92.06	87.83	85.22	83.59	81.82	76.47	62.73	34.54	10.85	1.88	0.33	0.11	0.00
			(3)								100.00	99.69	94.12	30.70	5.87	0.86	0.46	0.00
			(4)	100.00	86.65	63.74	47.06	34.12	28.24	26.27	23.53	17.25	7.20	0.70	0.26	0.06	0.00	
Belle Is-Milliken	9.6	16	(1)		0.00	1.62	0.56	0.68	0.69	1.10	5.81	24.48	31.54	23.30	7.87	1.87	0.42	0.07
461.4 - 451.8		0**	(2)		100.00	98.38	97.82	97.14	96.45	95.35	89.54	65.06	33.53	10.22	2.35	0.49	0.07	0.00
			(3)								100.00	99.68	90.65	35.34	9.92	2.02	0.32	0.00
			(4)		100.00	83.33	82.27	78.25	72.15	69.00	63.21	30.35	3.87	0.97	0.18	0.04	0.00	
Milliken-Vicksburg	16.8	87	(1)	0.00	0.05	0.82	0.86	1.15	2.08	3.26	10.10	26.47	29.78	14.37	5.41	1.81	1.35	2.47
451.8 - 435.0		1**	(2)	100.00	99.95	99.13	98.27	97.12	95.04	91.78	81.68	55.21	25.43	14.06	5.65	3.84	2.49	0.00
Includes discharge range			(3)							100.00	99.91	99.48	97.80	94.75	90.82	75.41	36.07	0.00
			(4)	100.00	95.00	90.10	82.88	71.27	56.66	45.79	20.62	4.38	0.86	0.28	0.00			
Racetrack-Towhead	12.2	8	(1)		0.00	0.89	0.26	0.66	1.16	2.48	9.88	20.16	26.46	19.77	16.12	1.73	0.33	0.10
435.0 - 422.8		0**	(2)		100.00	99.11	98.85	98.19	97.03	94.55	84.67	64.51	38.05	18.28	2.16	0.44	0.10	0.00
			(3)							100.00	97.92	86.43	66.84	38.75	3.91	1.04	0.46	0.00
			(4)		100.00	92.86	92.31	91.48	89.29	84.34	66.15	29.92	6.79	1.56	0.20	0.00		
Pt. Pleasant	15.4	144	(1)	0.00	1.12	1.21	0.81	0.61	0.66	1.06	4.68	16.53	27.17	23.65	12.83	4.81	1.68	3.17
422.8 - 407.4		2**	(2)	100.00	98.88	97.67	96.86	96.25	95.59	94.53	89.85	73.31	46.15	22.49	9.66	4.85	3.17	0.00
			(3)									100.00	99.70	98.52	88.74	84.17	77.50	0.00
			(4)	100.00	35.94	18.37	6.58	2.72	1.25	0.91	0.57	0.34	0.23	0.00				
Grand Gulf	12.2	62	(1)	0.00	0.32	0.80	0.92	0.23	0.48	0.96	5.15	15.80	23.37	21.77	14.58	5.21	2.52	7.88
407.4 - 395.2		4**	(2)	100.00	99.68	98.88	97.95	97.72	97.24	96.29	91.13	75.33	51.96	30.19	15.62	10.40	7.88	0.00
			(3)									100.00	99.69	97.84	86.21	49.56	22.87	0.00
			(4)	100.00	88.85	79.59	40.82	39.80	38.78	36.73	1.02	0.00						
Rodney	13.8	43	(1)		0.00	0.68	0.91	1.09	1.06	1.55	5.41	17.54	23.43	23.83	18.69	4.87	0.73	0.20
395.2 - 381.4		0**	(2)		100.00	99.32	98.41	97.32	96.26	94.71	89.30	71.76	48.32	24.49	5.80	0.93	0.20	0.00
			(3)									100.00	99.84	94.37	39.30	9.64	1.75	0.00
			(4)		100.00	93.30	89.49	79.35	68.54	61.19	47.03	16.42	4.60	0.94	0.13	0.00		

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 12 (Concluded)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Waterproof	13.2	21	(1)*		0.00	0.19	0.18	0.17	0.18	0.33	2.06	10.73	29.75	31.32	17.84	5.14	1.24	0.86
381.4 - 368.2		0**	(2)		100.00	99.81	99.63	99.46	99.28	98.95	96.88	86.16	56.40	25.08	7.24	2.10	0.86	0.00
			(3)								100.00	99.91	99.72	98.32	59.87	18.99	10.89	0.00
			(4)		100.00	97.24	96.04	94.84	92.74	88.60	70.71	40.22	8.52	1.38	0.24	0.06	0.00	
Natchez	13.0	31	(1)	0.00	1.87	0.38	0.16	0.21	0.27	0.64	4.07	17.40	28.19	25.05	9.72	1.81	0.32	9.93
368.2 - 355.2		3**	(2)	100.00	98.13	97.75	97.59	97.38	97.11	96.47	92.40	75.00	46.81	21.76	12.04	10.23	9.91	0.00
Includes discharge range			(3)								100.00	99.94	97.82	61.28	12.69	3.35	1.44	0.00
			(4)	100.00	42.11	33.33	33.33	32.46	32.02	31.58	31.14	23.57	12.23	1.36	0.18	0.00		
St. Catherine	16.6	22	(1)	0.00	0.00	0.00	0.02	0.02	0.10	0.16	1.12	9.07	25.09	31.17	23.17	5.07	2.14	2.86
355.2 - 338.6		0**	(2)	100.00	100.00	100.00	99.98	99.96	99.86	99.70	98.58	89.51	64.41	33.24	10.07	5.00	2.86	0.00
			(3)									100.00	99.05	95.84	93.85	86.79	58.55	0.00
			(4)	100.00	100.00	100.00	99.56	99.55	99.10	98.28	90.87	57.32	13.07	3.07	0.45	0.09	0.07	0.00
Bougere	18.2		(1)															
338.6 - 320.4			(2)															
			(3)															
			(4)															

(Sheet 4 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 13

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1972

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico	10.0	4	(1)*		0.00	0.37	0.09	0.09	0.32	1.22	6.19	24.32	27.64	25.59	8.68	1.95	1.11	2.42
616.0 - 606.0		0**	(2)		100.00	99.63	99.53	99.45	99.13	97.91	91.72	67.39	39.75	14.16	5.48	3.53	2.42	0.00
			(3)							100.00	99.94	99.62	92.58	28.47	15.88	13.17	9.42	0.00
			(4)		100.00	98.50	98.13	97.94	97.47	95.79	85.00	40.88	11.13	1.59	0.19	0.00		
Smith Pt.-Terrene	11.8	28	(1)		0.00	1.79	0.38	0.50	0.72	1.44	5.38	15.30	25.68	22.88	7.07	1.98	1.47	15.41
606.0 - 594.2		4**	(2)		100.00	98.21	97.83	97.33	96.61	95.17	89.79	74.49	48.81	25.93	18.86	16.88	15.41	0.00
			(3)								100.00	99.08	94.07	84.58	72.92	50.40	23.72	0.00
			(4)		100.00	51.92	50.00	48.08	47.12	46.15	45.19	25.80	4.95	0.38	0.08	0.00		
Terrene-Ozark	13.2	28	(1)			0.00	0.07	0.22	0.43	0.69	3.34	13.10	24.56	23.19	13.41	9.53	4.30	7.17
594.2 - 581.0		0**	(2)			100.00	99.93	99.71	99.28	98.59	95.25	82.15	57.59	34.40	20.99	11.46	7.16	0.00
			(3)									100.00	99.48	98.09	94.13	89.29	73.84	0.00
			(4)			100.00	98.96	94.89	86.93	78.87	61.47	25.45	8.08	2.56	0.11	0.00		
Ozark-Eutaw	15.1	243	(1)	0.00	0.21	0.47	0.46	0.39	0.56	0.80	3.73	17.72	38.55	27.13	7.40	1.64	0.57	0.35
581.0 - 565.9		0**	(2)	100.00	99.79	99.32	98.86	98.47	97.91	97.11	93.38	75.66	37.11	9.98	2.58	0.94	0.37	0.00
includes discharge range			(3)									100.00	99.30	93.01	70.38	42.17	22.38	0.00
			(4)	100.00	57.73	42.00	31.73	28.00	26.00	25.18	23.91	8.35	0.63	0.32	0.00			
Choctaw Bar	15.5	49	(1)	0.00	0.28	0.96	0.76	0.79	0.94	1.51	6.83	23.36	35.71	18.06	7.45	1.16	0.15	2.06
565.9 - 550.4		1**	(2)	100.00	99.72	98.76	98.00	97.21	96.27	94.76	87.93	64.57	28.86	10.80	3.35	2.19	2.04	0.00
			(3)								100.00	99.37	96.60	59.97	12.15	1.88	0.27	0.00
			(4)	100.00	86.37	65.47	54.93	48.26	45.67	44.88	42.89	21.25	3.53	0.71	0.12	0.00		
Greenville	19.2	7	(1)		0.00	0.68	0.38	0.52	0.91	2.12	9.54	30.74	29.95	19.69	4.34	0.88	0.24	0.02
550.4 - 531.2		0**	(2)		100.00	99.32	98.94	98.42	97.51	95.39	85.86	55.12	25.17	5.48	1.14	0.25	0.02	0.00
			(3)						100.00	99.73	98.58	89.17	66.70	19.27	3.91	0.71	0.12	0.00
			(4)		100.00	95.24	94.52	94.07	92.91	89.53	73.46	27.32	3.38	0.33	0.06	0.00		
Lakeport Towhead	7.0	2	(1)		0.00	0.86	1.21	0.65	0.74	1.44	6.08	16.71	26.42	33.80	10.56	1.19	0.29	0.05
531.2 - 524.2		0**	(2)		100.00	99.14	97.93	97.28	96.54	95.10	89.01	72.31	45.89	12.08	1.52	0.34	0.05	0.00
			(3)					100.00	99.81	99.52	98.75	91.94	78.21	21.40	2.78	0.67	0.10	0.00
			(4)		100.00	98.27	95.85	94.56	93.26	90.67	79.27	52.68	13.56	2.76	0.26	0.00		

(Continued)

(Sheet 1 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 13 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Kentucky Bend	9.4	2	(1)*		0.00	1.44	0.42	0.81	0.76	1.68	6.12	19.95	37.83	25.01	5.22	0.59	0.16	0.00
524.2 - 514.8		0**	(2)		100.00	98.56	98.14	97.32	96.56	94.88	88.76	68.81	30.98	5.96	0.74	0.16	0.00	
			(3)						100.00	99.79	98.72	90.61	46.26	10.25	1.17	0.21	0.00	
			(4)		100.00	97.11	96.27	94.65	93.13	89.98	78.80	47.01	15.69	1.68	0.31	0.10	0.00	
Cracraft-Carolina	8.2	2	(1)							0.00	0.49	12.96	42.00	33.98	9.15	1.11	0.28	0.03
514.8 - 506.6		0**	(2)							100.00	99.51	86.55	44.55	10.57	1.42	0.31	0.03	0.00
			(3)							100.00	99.62	87.18	45.33	11.43	1.57	0.38	0.05	0.00
			(4)							100.00	99.40	85.91	43.77	9.71	1.27	0.24	0.00	
Carolina-Baleshed	11.0	7	(1)	0.00	0.58	2.09	1.94	2.48	3.36	3.81	9.00	19.92	27.95	20.63	6.73	1.19	0.29	0.03
506.6 - 495.6		0**	(2)	100.00	99.42	97.33	95.39	92.92	89.56	85.75	76.75	56.83	28.88	8.25	1.52	0.32	0.03	0.00
			(3)				100.00	99.11	97.33	94.83	93.43	87.80	73.84	20.26	3.59	0.64	0.09	0.00
			(4)	100.00	95.92	90.08	83.46	77.03	70.05	64.16	52.17	24.75	3.94	0.61	0.05	0.00		
Baleshed Landing	10.0	3	(1)		0.00	1.07	0.57	0.18	0.49	1.03	4.54	17.92	33.02	27.28	11.36	1.96	0.46	0.12
495.6 - 485.6		0**	(2)		100.00	98.93	98.35	98.17	97.68	96.65	92.11	74.20	41.18	13.90	2.54	0.58	0.12	0.00
			(3)							100.00	99.94	99.42	84.02	39.27	8.04	1.85	0.43	0.00
			(4)		100.00	91.41	88.15	87.61	86.85	85.65	80.43	43.24	16.97	2.66	0.50	0.06	0.00	
Ajax Bar	5.8	9	(1)		0.00	0.19	0.56	0.51	1.00	1.70	4.57	12.50	21.09	32.16	9.64	2.94	1.05	12.09
485.6 - 479.8		1**	(2)		100.00	99.81	99.25	98.74	97.74	96.03	91.46	78.96	57.87	25.72	16.08	13.14	12.09	0.00
			(3)								100.00	99.84	98.89	28.52	24.73	14.83	8.45	0.00
			(4)		100.00	98.31	97.54	95.21	91.52	83.91	64.62	26.66	14.25	1.60	0.25	0.00		
Ajax-Cottonwood	7.8	1	(1)			0.00	0.69	0.00	0.15	0.23	1.52	9.37	16.83	48.74	18.20	3.27	0.99	0.00
479.8 - 472.0		0**	(2)			100.00	99.31	99.31	99.16	98.93	97.41	88.04	71.21	22.47	4.27	0.99	0.00	
			(3)			100.00	99.31	99.31	99.16	98.93	97.41	88.04	71.21	22.47	4.27	0.99	0.00	
			(4)			100.00	99.31	99.31	99.16	98.93	97.41	88.04	71.21	22.47	4.27	0.99	0.00	
Cottonwood Bar	4.2	3	(1)		0.00	0.97	1.12	1.48	1.38	1.33	2.31	6.06	19.49	17.15	29.99	15.97	2.51	0.25
472.0 - 467.8		0**	(2)		100.00	99.03	97.92	96.44	95.05	93.72	91.41	85.35	65.86	48.71	18.73	2.76	0.25	0.00
			(3)								100.00	99.41	96.48	93.25	49.34	7.05	0.59	0.00
			(4)		100.00	97.09	93.75	89.31	85.16	81.16	74.33	58.69	20.51	3.13	0.65	0.29	0.07	0.00

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 13 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cottonwood-Belle Is 467.8 - 461.4	6.4	5	(1)*			0.00	0.06	0.03	0.13	0.99	7.77	10.55	14.58	19.22	6.07	2.81	7.27	30.53
		1**	(2)			100.00	99.94	99.91	99.78	98.79	91.02	80.47	65.89	46.67	40.60	37.80	30.53	0.00
			(3)								100.00	97.48	95.98	94.53	92.57	84.93	51.50	0.00
			(4)			100.00	99.72	99.65	99.30	95.15	58.47	13.14	3.58	2.53	2.18	0.77	0.00	
Belle Is-Milliken 461.4 - 451.8	9.6	9	(1)		0.00	1.48	2.16	2.78	6.01	6.78	10.80	18.52	20.77	16.39	10.77	2.59	0.70	0.24
		0**	(2)		100.00	98.52	96.36	93.59	87.58	80.80	69.99	51.47	30.70	14.31	3.54	0.95	0.24	0.00
			(3)						100.00	99.78	98.89	97.11	94.97	68.72	21.32	6.42	1.86	0.00
			(4)		100.00	87.52	80.21	72.29	55.30	34.15	15.09	5.30	1.58	0.51	0.09	0.00		
Milliken-Vicksburg 451.8 - 435.0 Includes discharge range	16.8	237	(1)	0.00	0.42	1.93	1.80	1.57	2.03	2.63	9.16	27.48	32.45	14.62	4.74	0.91	0.23	0.03
		0**	(2)	100.00	99.58	97.65	95.85	94.28	92.25	89.62	80.46	52.98	20.53	5.91	1.17	0.26	0.03	0.00
			(3)								100.00	99.15	95.61	69.14	17.52	3.68	2.14	0.00
			(4)	100.00	79.93	18.16	8.38	3.98	3.11	3.03	1.45	0.57	0.21	0.00				
Racetrack-Towhead 435.0 - 422.8	12.2	11	(1)		0.00	0.41	0.33	0.22	0.30	0.61	2.96	16.72	28.28	34.10	9.11	2.64	1.95	2.38
		0**	(2)		100.00	99.59	99.27	99.04	98.74	98.13	95.17	78.45	50.17	16.07	6.96	4.32	2.38	0.00
			(3)							100.00	99.87	98.58	90.90	68.25	59.07	42.26	24.89	0.00
			(4)		100.00	95.50	92.59	91.82	90.72	88.69	81.34	45.11	9.26	1.61	0.33	0.11	0.00	
Pt. Pleasant 422.8 - 407.4	15.4	17	(1)	0.00	2.95	0.68	0.95	0.58	0.53	0.76	3.46	10.85	17.52	24.33	21.33	9.75	4.14	2.18
		0**	(2)	100.00	97.05	96.38	95.43	94.85	94.32	93.56	90.10	79.25	61.73	37.40	16.07	6.32	2.18	0.00
			(3)									100.00	99.54	94.92	70.06	50.00	26.02	0.00
			(4)	100.00	49.87	40.98	34.63	32.35	31.58	30.90	28.17	18.97	8.27	2.22	0.25	0.05	0.00	
Grand Gulf 407.4 - 395.2	12.2	4	(1)		0.00	0.23	0.51	0.46	0.80	1.45	5.23	19.26	30.81	12.39	18.02	9.02	1.65	0.16
		0**	(2)		100.00	99.77	99.26	98.80	98.00	96.54	91.31	72.06	41.24	28.85	10.83	1.81	0.16	0.00
			(3)							100.00	99.59	93.48	84.93	75.76	28.41	3.23	0.51	0.00
			(4)		100.00	99.09	97.05	96.21	95.86	91.00	73.83	38.34	18.82	1.69	0.56	0.21	0.00	
Rodney 395.2 - 381.4	13.8	51	(1)		0.00	0.25	0.42	0.39	0.71	1.18	5.16	14.51	26.13	25.18	16.94	5.47	2.10	1.54
		4**	(2)		100.00	99.75	99.33	98.94	98.23	97.05	91.89	77.38	51.25	26.07	9.13	3.66	1.56	0.00
			(3)								100.00	99.87	99.46	94.19	73.73	67.65	50.90	0.00
			(4)		100.00	95.45	90.97	82.47	73.43	65.19	48.06	17.96	1.62	0.14	0.00			

(Continued)

(Sheet 3 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 13 (Concluded)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	Gravel 19.05	Gravel 9.525	Gravel 4.699	Gravel 2.362	Sand 1.168	Sand 0.833	Sand 0.589	Sand 0.417	Sand 0.295	Sand 0.208	Sand 0.147	Sand 0.104	Sand 0.074	Silt Clay 0.000
Waterproof	13.2	66	(1)*	0.00	0.15	0.40	0.15	0.07	0.08	0.16	1.51	10.58	31.47	30.82	16.14	4.79	2.35	1.33
381.4 - 368.2		0**	(2)	100.00	99.85	99.45	99.30	99.23	99.15	98.99	97.48	86.90	55.43	24.61	8.47	3.68	1.33	0.00
			(3)									100.00	99.65	98.79	92.86	74.87	34.97	0.00
			(4)	100.00	90.13	88.82	86.01	85.60	85.35	84.94	78.28	41.69	11.40	1.09	0.25	0.00		
Natchez	13.0	298	(1)	0.00	0.09	0.64	0.38	0.20	0.32	0.84	5.68	22.81	30.65	25.63	9.08	2.27	0.95	0.46
368.2 - 355.2		0**	(2)	100.00	99.91	99.27	98.89	98.69	98.37	97.53	91.85	69.04	38.39	12.76	3.68	1.41	0.46	0.00
Includes discharge range			(3)									100.00	99.83	95.25	79.27	53.58	27.27	0.00
			(4)	100.00	83.19	58.93	51.03	49.84	47.85	44.77	30.95	9.95	1.54	0.11	0.00			
St. Catherine	16.6	80	(1)		0.00	0.13	0.21	0.31	0.40	0.46	1.97	9.66	22.15	34.27	19.42	4.61	2.89	3.52
355.2 - 338.6		1**	(2)		100.00	99.87	99.66	99.35	98.95	98.49	96.52	86.86	64.71	30.44	11.02	6.41	3.52	0.00
			(3)									100.00	99.84	96.62	92.75	79.71	41.13	0.00
			(4)		100.00	91.60	90.81	89.95	84.24	72.90	48.53	15.31	2.43	1.01	0.09	0.00		
Bougere	18.2	61	(1)	0.00	0.39	0.61	0.65	0.68	0.97	1.64	6.42	16.90	28.65	24.10	10.28	4.02	1.66	3.03
338.6 - 320.4		1**	(2)	100.00	99.61	99.00	98.35	97.67	96.70	95.06	88.64	71.74	43.09	18.99	8.71	4.69	3.03	0.00
			(3)								100.00	99.72	99.31	96.70	76.20	50.00	45.00	0.00
			(4)	100.00	87.55	80.01	74.43	68.03	60.43	52.56	20.60	3.75	1.71	0.94	0.19	0.00		

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 14

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1973

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico	10.0	19	(1)*		0.00	0.93	0.52	0.28	0.73	1.69	7.86	26.86	32.99	17.58	7.27	2.39	0.74	0.17
616.0 - 606.0		0**	(2)		100.00	99.07	98.55	98.27	97.54	95.85	87.99	61.13	28.15	10.56	3.30	0.90	0.17	0.00
			(3)						100.00	99.91	99.64	97.36	95.81	88.68	45.27	14.11	2.79	0.00
			(4)		100.00	90.39	87.35	85.30	80.14	70.67	45.51	17.39	3.53	0.71	0.14	0.00		
Smith Pt.-Terrene	11.8	21	(1)		0.00	1.00	0.67	0.66	1.46	2.94	8.95	21.54	17.56	12.53	10.69	2.50	0.36	19.13
606.0 - 594.2		4**	(2)		100.00	99.00	98.33	97.67	96.22	93.27	84.32	62.79	45.22	32.69	22.00	19.49	19.13	0.00
			(3)							100.00	98.93	95.32	90.01	79.10	22.32	2.26	0.69	0.00
			(4)		100.00	92.04	90.71	88.35	81.09	69.40	31.90	6.43	0.92	0.34	0.16	0.00		
Terrene-Ozark	13.2	47	(1)	0.00	0.43	0.21	0.26	0.25	0.64	0.95	3.60	15.04	30.97	24.02	9.43	2.07	1.27	10.85
594.2 - 581.0		4**	(2)	100.00	99.57	99.36	99.10	98.85	98.21	97.26	93.65	78.61	47.64	23.63	14.19	12.12	10.85	0.00
			(3)								100.00	99.60	95.70	93.06	87.67	77.75	51.76	0.00
			(4)	100.00	79.91	79.91	79.96	77.81	75.71	71.21	58.92	22.34	2.47	1.24	0.28	0.00		
Ozark-Eutaw	15.1	312	(1)	0.00	0.80	0.99	0.62	0.53	0.99	1.60	5.44	20.17	34.20	24.31	6.89	1.32	0.39	1.73
581.0 - 565.9		1**	(2)	100.00	99.20	98.21	97.59	97.06	96.07	94.47	89.03	68.86	34.66	10.35	3.46	2.14	1.75	0.00
Includes discharge range			(3)								100.00	99.93	99.46	86.03	38.49	14.43	9.82	0.00
			(4)	100.00	26.84	24.88	22.57	16.86	13.54	11.40	8.08	2.21	0.35	0.07	0.00			
Choctaw Bar	15.5	38	(1)	0.00	0.47	0.77	0.75	0.57	0.65	1.09	4.98	19.75	33.60	28.58	7.01	1.37	0.29	0.13
565.9 - 550.4		0**	(2)	100.00	99.53	98.76	98.02	97.45	96.80	95.71	90.72	70.97	37.37	8.80	1.78	0.41	0.13	0.00
			(3)								100.00	98.53	94.42	50.00	12.91	3.11	2.54	0.00
			(4)	100.00	82.21	81.04	76.76	76.51	76.51	71.81	45.30	7.75	1.04	0.41	0.08	0.00		
Greenville	19.2	39	(1)	0.00	1.56	1.74	1.87	1.69	1.61	1.69	4.71	17.24	29.50	24.93	10.92	2.09	0.37	0.07
550.4 - 531.2		0**	(2)	100.00	98.44	96.70	94.83	93.14	91.53	89.84	85.13	67.88	38.39	13.45	2.53	0.44	0.07	0.00
			(3)								100.00	99.83	98.72	91.89	26.96	4.10	0.80	0.00
			(4)	100.00	62.24	54.35	41.32	32.85	15.60	9.59	5.90	3.03	0.99	0.41	0.10	0.00		
Lakeport Towhead	7.0	6	(1)		0.00	0.89	0.62	0.73	0.60	0.88	2.86	12.63	29.68	37.89	10.40	1.88	0.88	0.07
531.2 - 524.2		0**	(2)		100.00	99.11	98.50	97.76	97.16	96.28	93.42	80.79	51.11	13.23	2.83	0.95	0.07	0.00
			(3)							100.00	99.63	97.53	88.39	23.58	7.59	2.56	0.37	0.00
			(4)		100.00	94.67	93.69	93.10	92.11	90.63	85.31	69.53	23.86	5.97	0.74	0.25	0.00	

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 14 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Kentucky Bend	9.4	8	(1)*			0.00	0.15	0.20	0.58	1.28	3.81	16.97	37.85	30.29	6.37	1.06	0.43	1.01
524.2 - 514.8		0**	(2)			100.00	99.85	99.65	99.07	97.80	93.99	77.02	39.17	8.88	2.50	1.44	1.01	0.00
			(3)								100.00	98.63	83.52	16.09	8.05	5.30	4.27	0.00
			(4)			100.00	98.81	97.85	95.14	90.61	78.58	42.44	9.95	2.47	0.56	0.00		
Cracraft-Carolina	8.2	6	(1)		0.00	1.39	0.74	0.80	1.90	3.03	7.19	16.75	30.15	26.18	8.58	1.38	0.64	1.25
514.8 - 506.6		0**	(2)		100.00	98.61	97.87	97.06	95.17	92.14	84.95	68.20	38.04	11.86	3.27	1.89	1.25	0.00
			(3)							100.00	99.27	95.37	77.49	27.97	13.44	9.77	7.27	0.00
			(4)		100.00	94.34	93.67	92.67	87.35	79.18	56.70	16.49	3.83	1.08	0.25	0.00		
Carolina-Baleshed	11.0	20	(1)	0.00	0.96	1.88	1.25	0.63	0.51	0.70	3.12	14.81	29.08	30.00	10.34	2.82	1.59	2.31
506.6 - 495.6		0**	(2)	100.00	99.04	97.16	95.91	95.28	94.77	94.06	90.95	76.14	47.06	17.06	6.72	3.90	2.31	0.00
			(3)								100.00	99.73	99.12	94.67	71.86	51.28	29.22	0.00
			(4)	100.00	80.87	72.74	65.81	62.80	61.60	60.84	56.94	35.78	14.17	1.58	0.36	0.00		
Baleshed Landing	10.0	8	(1)		0.00	1.07	0.57	0.18	0.49	1.03	4.54	17.92	33.02	27.28	11.36	1.96	0.46	0.12
495.6 - 485.6		0**	(2)		100.0	98.93	98.35	98.17	97.68	96.65	92.11	74.20	41.18	13.90	2.54	0.58	0.12	0.00
			(3)							100.00	99.94	99.42	84.02	39.27	8.04	1.85	0.43	0.00
			(4)		100.00	91.41	88.15	87.61	86.85	85.65	80.43	43.24	16.97	2.66	0.50	0.06	0.00	
Ajax Bar	5.8	17	(1)		0.00	1.16	0.60	0.77	1.36	1.64	5.03	15.83	25.03	29.26	15.08	3.53	0.66	0.04
485.6 - 479.8		0**	(2)		100.00	98.84	98.24	97.47	96.11	94.47	89.44	73.61	48.58	19.31	4.23	0.70	0.04	0.00
			(3)							100.00	99.84	98.62	96.12	65.45	21.93	3.32	0.35	0.00
			(4)		100.00	83.04	79.48	78.96	77.74	74.83	56.60	21.97	4.40	0.88	0.18	0.00		
Ajax-Cottonwood	7.8	6	(1)	0.00	1.07	2.19	0.88	0.63	0.90	1.36	4.14	9.51	6.41	4.96	16.70	22.06	9.91	19.28
479.8 - 472.0		1**	(2)	100.00	98.93	96.74	95.86	95.23	94.33	92.96	88.82	79.31	72.91	67.95	51.25	29.19	19.28	0.00
			(3)							100.00	99.80	99.49	98.53	93.88	69.08	26.83	6.08	0.00
			(4)	100.00	93.59	80.42	75.15	72.26	69.62	66.20	53.91	23.18	7.64	3.07	1.58	0.53	0.00	0.00
Cottonwood Bar	4.2	7	(1)	0.00	1.50	0.56	0.33	0.25	0.35	1.06	4.64	13.53	21.82	31.68	19.28	4.36	0.64	0.02
472.0 - 467.8		0**	(2)	100.00	98.50	97.94	97.61	97.37	97.02	95.96	91.31	77.79	55.97	24.29	5.01	0.65	0.02	0.00
			(3)							100.00	99.87	99.28	97.95	77.07	26.82	3.48	0.11	0.00
			(4)	100.00	89.48	86.98	84.89	83.97	82.30	76.79	53.26	16.19	2.84	0.83	0.42	0.00		

(Continued)

(Sheet 2 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 14 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	19.05	9.525	4.699	2.362	Sand 1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	Silt Clay 0.000
				Size of Sieve Opening in mm.														
Cottonwood-	6.4	9	(1)*		0.00	0.83	1.04	1.71	3.27	2.51	4.92	19.36	31.47	21.49	8.46	2.40	0.81	1.74
Belle Is.		0**	(2)		100.00	99.17	98.13	96.41	93.14	90.63	85.72	66.36	34.89	13.40	4.95	2.55	1.74	0.00
467.8 - 461.4			(3)								100.00	98.91	87.09	69.96	32.86	20.07	14.86	0.00
			(4)		100.00	94.61	87.86	76.51	55.71	45.07	33.50	16.47	3.76	0.57	0.14	0.06	0.00	
Belle Is. -	9.6	2	(1)	0.00	17.95	8.43	3.88	4.07	2.63	2.37	6.90	17.72	23.70	10.54	1.21	0.40	0.18	0.00
Milliken		0**	(2)	100.00	82.05	73.61	69.73	65.66	63.03	60.66	53.75	36.03	12.33	1.79	0.58	0.18	0.00	
			(3)			100.00	99.73	99.47	98.40	96.12	86.36	59.63	19.12	2.01	0.75	0.22	0.00	
			(4)	100.00	64.09	47.23	39.73	31.86	27.66	25.19	21.14	12.44	5.55	1.57	0.40	0.13	0.00	
Milliken-Vicksburg	16.8	397	(1)	0.00	2.27	3.62	2.90	2.43	3.29	4.83	14.08	30.69	27.17	6.77	1.50	0.32	0.09	0.02
451.8 - 435.0		0**	(2)	100.00	97.73	94.11	91.21	88.78	85.49	80.66	66.58	35.89	8.72	1.95	0.45	0.13	0.04	0.00
Includes discharge range			(3)								100.00	99.47	98.82	80.64	21.60	3.04	0.77	0.00
			(4)	100.00	21.94	4.18	3.09	0.22	0.18	0.18	0.18	0.08	0.00					
Racetrack-Towhead	12.2	10	(1)		0.00	0.36	0.19	0.11	0.18	0.22	1.93	10.87	18.79	35.18	18.59	7.29	3.55	2.74
435.0 - 422.8		0**	(2)		100.00	99.64	99.45	99.34	99.15	98.94	97.00	86.14	67.35	32.17	13.58	6.29	2.74	0.00
			(3)								100.00	99.90	98.51	86.76	57.59	40.33	22.62	0.00
			(4)		100.00	96.38	95.10	94.23	93.56	92.49	84.51	61.17	9.96	1.39	0.24	0.08	0.00	
Pt. Pleasant	15.4	12	(1)		0.00	0.54	0.59	0.54	0.69	0.88	3.49	10.33	17.53	15.84	9.40	4.69	1.77	33.71
422.8 - 407.4		4**	(2)		100.00	99.46	98.87	98.32	97.63	96.76	93.27	82.94	65.41	49.57	40.17	35.48	33.71	0.00
			(3)							100.00	99.88	98.58	95.87	89.94	56.65	20.39	3.61	0.00
			(4)		100.00	93.51	88.83	83.61	77.66	72.11	55.38	33.65	15.38	3.09	0.19	0.10	0.00	
Grand Gulf	12.2	5	(1)		0.00	2.19	1.14	1.37	1.60	1.47	4.12	16.58	32.33	26.44	10.32	1.57	0.54	0.33
407.4 - 395.2		0**	(2)		100.00	97.81	96.67	95.30	93.70	92.24	88.12	71.54	39.20	12.76	2.44	0.87	0.33	0.00
			(3)							100.00	99.50	92.05	77.86	49.43	8.70	2.40	0.92	0.00
			(4)		100.00	89.06	83.36	77.36	70.15	64.07	51.99	22.52	4.24	1.20	0.25	0.08	0.00	
Rodney	13.8	14	(1)		0.00	0.24	0.19	0.09	0.17	0.49	4.15	21.86	26.59	23.80	16.21	3.84	1.22	1.17
395.2 - 381.4		0**	(2)		100.00	99.76	99.58	99.49	99.31	98.83	94.68	72.82	46.23	22.43	6.22	2.39	1.17	0.00
			(3)								100.00	99.86	98.54	70.40	26.53	18.37	15.31	0.00
			(4)		100.00	96.66	95.61	95.22	95.22	95.03	84.11	33.51	3.73	0.18	0.00			

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 14 (Concluded)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Waterproof	13.2	6	(1)*		0.00	0.27	0.79	0.15	0.23	0.39	2.69	9.97	25.41	24.84	28.05	5.71	1.16	0.34
381.4 - 368.2		0**	(2)		100.00	99.73	98.93	98.79	98.56	98.17	95.48	85.51	60.10	35.26	7.21	1.50	0.34	0.00
			(3)							100.00	99.93	99.57	98.20	81.22	19.56	4.46	1.11	0.00
			(4)		100.00	98.37	95.84	95.67	95.59	94.73	87.19	67.43	13.88	2.45	0.33	0.08	0.00	
Natchez	13.0	384	(1)	0.00	0.93	1.96	1.01	0.61	0.72	1.23	7.25	30.28	36.69	15.22	3.33	0.55	0.20	0.02
368.2 - 355.2		0**	(2)	100.00	99.07	97.11	96.10	95.49	94.77	93.54	86.29	56.01	19.32	4.10	0.77	0.22	0.02	0.00
Includes discharge range			(3)							100.00	99.62	99.23	96.65	45.88	7.44	3.92	0.88	0.00
			(4)	100.00	38.67	14.30	14.30	14.24	14.17	14.11	13.39	9.01	2.36	0.33	0.00			
St. Catherine	16.6	13	(1)	0.00	1.89	0.72	0.88	0.73	0.91	1.17	4.17	12.88	22.22	28.08	16.32	1.99	0.29	7.77
355.2 - 338.6		1**	(2)	100.00	98.11	97.40	96.52	95.79	94.89	93.72	89.55	76.68	54.46	26.37	10.05	8.06	7.77	0.00
			(3)								100.00	99.51	96.85	75.87	8.80	1.29	0.50	0.00
			(4)	100.00	75.49	75.49	72.86	72.75	69.62	61.30	42.39	27.62	3.39	0.51	0.10	0.00		
Bougere	18.2	19	(1)		0.00	0.32	0.96	1.17	1.71	1.82	4.85	18.35	22.89	22.59	20.19	4.15	0.80	0.20
338.6 - 320.4		0**	(2)		100.00	99.68	98.72	97.55	95.84	94.02	89.17	70.81	47.92	25.34	5.15	1.00	0.20	0.00
			(3)								100.00	99.61	97.67	89.71	21.40	5.21	1.24	0.00
			(4)		100.00	93.95	78.91	61.47	44.70	32.66	19.46	6.05	1.37	0.66	0.34	0.09	0.00	

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

(Sheet 4 of 4)

Table 15

Mechanical Analysis of Material from Bed of Mississippi River, Vicksburg District, for Calendar Year 1974

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Cessions-Henrico	10.0	7	(1)*			0.00	0.07	0.08	0.11	0.31	2.87	9.71	26.93	32.90	11.57	1.00	0.10	14.34
616.0 - 606.0		1**	(2)			100.00	99.93	99.85	99.74	99.43	96.56	86.85	59.92	27.01	15.44	14.44	14.34	0.00
			(3)						100.00	99.91	99.82	99.37	94.52	39.77	3.23	0.36	0.22	0.00
			(4)			100.00	99.52	99.36	99.04	97.85	86.54	54.06	33.20	5.98	0.33	0.00		
Smith Pt.-Terrene	11.8	6	(1)		0.00	1.94	0.87	1.16	2.04	2.07	4.65	12.26	15.14	11.21	13.51	1.67	0.11	33.38
606.0 - 594.2		2**	(2)		100.00	98.06	97.19	96.03	94.00	91.93	87.28	75.02	59.88	48.67	35.16	33.49	33.38	0.00
			(3)							100.00	99.88	99.77	99.41	83.12	9.38	0.59	0.12	0.00
			(4)		100.00	88.38	83.13	76.46	65.67	55.25	36.06	15.59	5.55	1.35	0.27	0.09	0.00	
Terrene-Ozark	13.2	16	(1)		0.00	0.29	0.76	1.07	1.78	1.77	5.26	17.97	26.16	10.58	5.87	1.93	0.32	26.22
594.2 - 581.0		4**	(2)		100.00	99.71	98.94	97.87	96.09	94.31	89.05	71.08	44.93	34.35	28.48	26.55	26.22	0.00
			(3)						100.00	99.92	99.70	97.93	91.19	71.68	33.85	14.34	13.82	0.00
			(4)		100.00	95.95	85.68	71.24	46.83	29.73	10.03	1.57	0.54	0.24	0.10	0.00		
Ozark-Eutaw	15.1	284	(1)	0.00	1.33	1.43	1.65	1.74	2.19	1.83	4.50	12.91	23.43	33.32	11.60	2.69	0.76	0.65
581.0 - 565.9		0**	(2)	100.00	98.67	97.24	95.59	93.85	91.66	89.83	85.33	72.42	48.99	15.67	4.07	1.38	0.62	0.00
includes discharge range			(3)								100.00	99.87	98.31	87.00	78.52	66.91	45.48	0.00
			(4)	100.00	2.36	2.36	2.00	1.45	1.27	1.09	0.91	0.54	0.09	0.00				
Choctaw Bar	15.5	22	(1)		0.00	0.44	0.58	0.43	0.59	0.72	2.72	12.50	29.77	29.15	11.55	2.82	1.73	6.99
565.9 - 550.4		1**	(2)		100.00	99.56	98.97	98.54	97.96	97.24	94.52	82.02	52.25	23.10	11.54	8.72	6.99	0.00
			(3)								100.00	98.82	96.76	85.25	57.37	44.87	32.61	0.00
			(4)		100.00	93.31	82.03	73.73	65.08	59.24	47.37	25.34	5.85	0.85	0.17	0.08	0.00	
Greenville	19.2	9	(1)			0.00	0.03	0.22	0.70	1.16	3.79	10.10	20.50	31.56	19.41	4.97	1.30	6.27
550.4 - 531.2		0**	(2)			100.00	99.97	99.76	99.06	97.90	94.11	84.01	63.51	31.95	12.54	7.57	6.27	0.00
			(3)							100.00	99.91	99.74	98.28	77.64	50.14	43.58	34.84	0.00
			(4)			100.00	99.76	99.15	96.43	93.37	82.70	58.56	28.07	8.84	1.14	0.10	0.00	
Lakeport Towhead	7.0	18	(1)		0.00	2.05	0.73	0.14	0.13	0.20	1.37	11.88	34.68	28.94	13.90	4.47	1.17	0.34
531.2 - 524.2		0**	(2)		100.00	97.95	97.22	97.08	96.95	96.75	95.38	83.50	48.82	19.88	5.97	1.51	0.34	0.00
			(3)							100.00	99.72	98.93	97.01	88.31	43.77	12.47	2.47	0.00
			(4)		100.00	63.09	59.37	57.78	57.04	56.37	55.27	48.74	18.59	3.60	0.43	0.05	0.00	

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 14 (Concluded)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand									Silt Clay
				Size of Sieve Opening in mm.														
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	0.000
Waterproof	13.2	6	(1)*		0.00	0.27	0.79	0.15	0.23	0.39	2.69	9.97	25.41	24.84	28.05	5.71	1.16	0.34
381.4 - 368.2		0**	(2)		100.00	99.73	98.93	98.79	98.56	98.17	95.48	85.51	60.10	35.26	7.21	1.50	0.34	0.00
			(3)							100.00	99.93	99.57	98.20	81.22	19.56	4.46	1.11	0.00
			(4)		100.00	98.37	95.84	95.67	95.59	94.73	87.19	67.43	13.88	2.45	0.33	0.08	0.00	
Natchez	13.0	384	(1)	0.00	0.93	1.96	1.01	0.61	0.72	1.23	7.25	30.28	36.69	15.22	3.33	0.55	0.20	0.02
368.2 - 355.2		0**	(2)	100.00	99.07	97.11	96.10	95.49	94.77	93.54	86.29	56.01	19.32	4.10	0.77	0.22	0.02	0.00
Includes discharge range			(3)							100.00	99.62	99.23	96.65	45.88	7.44	3.92	0.88	0.00
			(4)	100.00	38.67	14.30	14.30	14.24	14.17	14.11	13.39	9.01	2.36	0.33	0.00			
St. Catherine	16.6	13	(1)	0.00	1.89	0.72	0.88	0.73	0.91	1.17	4.17	12.88	22.22	28.08	16.32	1.99	0.29	7.77
355.2 - 338.6		1**	(2)	100.00	98.11	97.40	96.52	95.79	94.89	93.72	89.55	76.68	54.46	26.37	10.05	8.06	7.77	0.00
			(3)								100.00	99.51	96.85	75.87	8.80	1.29	0.50	0.00
			(4)	100.00	75.49	75.49	72.86	72.75	69.62	61.30	42.39	27.62	3.39	0.51	0.10	0.00		
Bougere	18.2	19	(1)		0.00	0.32	0.96	1.17	1.71	1.82	4.85	18.35	22.89	22.59	20.19	4.15	0.80	0.20
338.6 - 320.4		0**	(2)		100.00	99.68	98.72	97.55	95.84	94.02	89.17	70.81	47.92	25.34	5.15	1.00	0.20	0.00
			(3)								100.00	99.61	97.67	89.71	21.40	5.21	1.24	0.00
			(4)		100.00	93.95	78.91	61.47	44.70	32.66	19.46	6.05	1.37	0.66	0.34	0.09	0.00	

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 15 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel					Sand										Silt Clay
				Size of Sieve Opening in mm.															
				38.10	19.05	9.525	4.699	2.362	1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074		0.000
Kentucky Bend	9.4	9	(1)*		0.00	0.33	1.38	0.68	0.84	1.36	5.31	17.76	32.67	27.32	10.03	1.61	0.20		0.51
524.2 - 514.8		0**	(2)		100.00	99.67	98.29	97.61	96.77	95.41	90.10	72.34	39.67	12.35	2.33	0.71	0.51		0.00
			(3)							100.00	99.94	99.52	94.59	37.40	11.65	4.13	3.97		0.00
			(4)		100.00	97.03	94.36	90.21	85.93	82.67	65.73	24.09	3.12	0.73	0.21	0.07	0.00		
Cracraft-Carolina	8.2	5	(1)			0.00	0.30	0.05	0.06	0.08	0.89	8.61	21.56	34.43	11.52	1.71	0.54		20.24
514.8 - 506.6		1**	(2)			100.00	99.70	99.65	99.59	99.51	98.62	90.01	68.45	34.02	22.49	20.78	20.24		0.00
			(3)							100.00	99.69	96.34	89.49	27.03	4.73	1.80	0.63		0.00
			(4)			100.00	98.92	98.83	98.65	98.56	97.06	69.79	11.94	2.94	1.21	0.56	0.00		
Carolina-Baleshed	11.0	20	(1)	0.00	0.63	0.40	1.17	1.44	2.45	2.75	6.73	16.88	21.41	22.28	12.50	4.36	1.31		5.70
506.6 - 495.6		1**	(2)	100.00	99.37	98.98	97.80	96.37	93.92	91.17	84.44	67.55	46.14	23.87	11.36	7.01	5.70		0.00
			(3)								100.00	99.76	99.20	97.45	71.82	27.47	9.16		0.00
			(4)	100.00	91.27	90.43	88.97	82.22	74.10	65.59	45.15	18.77	5.16	0.62	0.09	0.04	0.00		
Baleshed Landing	10.0	10	(1)		0.00	1.15	0.98	1.06	1.69	2.26	7.20	25.13	33.42	17.68	8.20	0.87	0.19		0.16
495.6 - 485.6		0**	(2)		100.00	98.85	97.87	96.81	95.11	92.86	85.65	60.52	27.11	9.42	1.22	0.35	0.16		0.00
			(3)							100.00	99.36	94.12	78.87	50.53	5.20	2.00	0.70		0.00
			(4)		100.00	88.50	85.76	82.82	75.50	65.30	45.11	17.59	1.71	0.34	0.07	0.00			
Ajax Bar	5.8	28	(1)		0.00	1.87	2.21	1.52	1.84	1.55	3.79	13.59	28.95	26.04	10.87	2.09	1.00		4.67
485.6 - 479.8		1**	(2)		100.00	98.13	95.92	94.40	92.57	91.01	87.22	73.63	44.68	18.64	7.77	5.68	4.67		0.00
			(3)							100.00	99.84	99.37	97.51	79.43	70.21	49.65	25.53		0.00
			(4)		100.00	59.69	35.61	21.94	17.55	16.12	13.88	8.78	3.27	1.22	0.19	0.00			
Ajax-Cottonwood	7.8	7	(1)	0.00	0.19	0.00	1.75	0.58	1.91	1.70	4.05	8.95	14.64	6.56	4.81	5.08	3.12		46.66
479.8 - 472.0		3**	(2)	100.00	99.81	99.81	98.06	97.48	95.57	93.87	89.82	80.87	66.22	59.67	54.85	49.77	46.66		0.00
			(3)							100.00	99.80	99.49	98.98	96.11	73.57	42.01	21.41		0.00
			(4)	100.00	98.64	98.64	93.18	90.97	81.36	74.64	61.86	32.76	12.78	4.65	0.47	0.06	0.00		0.00
Cottonwood Bar	4.2	7	(1)			0.00	0.28	0.38	0.87	1.42	5.53	18.12	40.13	24.38	7.33	1.30	0.17		0.10
472.0 - 467.3		0**	(2)			100.00	99.72	99.34	98.47	97.05	91.52	73.40	33.27	8.89	1.57	0.26	0.10		0.00
			(3)							100.00	99.79	96.19	95.46	43.61	7.53	0.72	0.12		0.00
			(4)			100.00	99.12	97.70	94.83	89.67	70.40	30.12	7.44	1.23	0.20	0.10	0.09		0.00

(Continued)

(Sheet 2 of 4)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 15 (Continued)

Reach Mile AHP	Reach Length in Mi.	No. of Samples		Gravel 38.10	19.05	9.525	4.699	2.362	Sand 1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	Silt Clay 0.000
				Size of Sieve Opening in mm.														
Cottonwood-	6.4	11	(1)*	0.00	0.55	1.02	1.95	1.18	2.40	3.12	11.02	22.02	21.59	18.03	6.44	1.15	0.27	9.27
Belle Is.		1**	(2)	100.00	99.45	98.42	96.48	95.30	92.90	89.78	78.76	56.74	35.15	17.13	10.69	9.53	9.20	0.00
467.8 - 461.4			(3)								100.00	98.33	94.64	47.39	11.13	2.88	0.82	0.00
			(4)	100.00	93.92	91.22	88.57	87.61	80.89	70.60	41.15	10.33	2.19	0.61	0.10	0.00		
Belle Is. -	9.6	3	(1)	0.00	2.20	0.00	0.61	0.75	1.62	2.82	10.15	26.60	29.26	15.80	5.06	2.01	0.98	2.13
Milliken		0**	(2)	100.00	97.80	97.80	97.19	96.43	94.81	91.99	81.84	55.23	25.97	10.17	5.11	3.10	2.13	0.00
461.4 - 451.8			(3)				100.00	99.93	98.72	97.80	93.62	80.62	53.74	28.19	14.54	8.81	6.17	0.00
			(4)	100.00	93.40	93.40	91.56	90.25	87.03	80.81	58.94	19.34	3.61	0.69	0.08	0.00		
Milliken-	16.8	255	(1)	0.00	0.28	0.96	2.20	1.60	2.24	3.68	11.96	28.09	27.21	14.11	4.61	0.97	0.25	1.84
Vicksburg		4**	(2)	100.00	99.72	98.76	96.56	94.96	92.72	89.04	77.08	48.99	21.78	7.67	3.06	2.09	1.84	0.00
451.8 - 435.0			(3)										100.00	95.47	48.12	37.91	23.86	0.00
Includes discharge range			(4)	100.00	77.17	58.06	11.24	2.81	2.81	2.81	2.25	1.03	0.25	0.00				
Racetrack-Towhead	12.2	16	(1)		0.00	0.12	0.03	0.09	0.15	0.35	2.07	8.35	17.51	37.23	22.83	6.87	2.67	1.74
435.0 - 422.8		0**	(2)		100.00	99.88	99.84	99.76	99.61	99.25	97.18	88.84	71.32	34.10	11.27	4.40	1.74	0.00
			(3)								100.00	99.78	99.60	94.49	53.43	27.75	12.14	0.00
			(4)		100.00	98.02	98.02	98.02	97.95	96.18	85.15	41.92	8.83	2.11	0.20	0.07	0.00	
Pt. Pleasant	15.4	16	(1)	0.00	0.32	0.54	0.65	0.50	0.81	1.56	7.57	18.69	22.05	19.17	8.06	2.57	3.09	14.45
422.8 - 407.4		2**	(2)	100.00	99.68	99.15	98.49	97.99	97.19	95.63	88.07	69.38	47.33	28.16	20.10	17.54	14.45	0.00
			(3)								100.00	99.41	99.16	98.46	95.67	75.14	29.47	0.00
			(4)	100.00	94.92	93.72	90.88	86.80	81.37	74.21	53.63	21.62	4.39	0.83	0.13	0.04	0.00	
Grand Gulf	12.2	6	(1)	0.00	5.49	3.29	2.28	1.62	0.93	0.86	3.66	11.25	23.09	34.46	6.95	1.76	1.84	2.51
407.4 - 395.2		0**	(2)	100.00	94.51	91.21	88.94	87.32	86.38	85.52	81.86	70.61	47.52	13.07	6.11	4.35	2.51	0.00
			(3)							100.00	99.63	97.52	79.03	35.36	28.93	22.96	13.32	0.00
			(4)	100.00	67.05	47.28	34.35	24.95	19.83	16.35	9.15	3.78	2.26	1.16	0.24	0.06	0.06	0.00
Rodney	13.8	22	(1)		0.00	0.34	0.27	0.14	0.20	0.30	1.58	8.91	15.07	31.87	15.02	4.09	3.25	18.95
395.2 - 381.4		3**	(2)		100.00	99.66	99.39	99.25	99.05	98.74	97.17	88.25	73.18	41.31	26.29	22.20	18.95	0.00
			(3)								100.00	98.94	98.45	77.83	73.73	67.65	50.90	0.00
			(4)		100.00	92.54	91.48	90.87	89.46	87.01	75.42	35.21	6.29	1.39	0.28	0.06	0.00	

(Continued)

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

Table 15 (Concluded)

Reach Mile AHP	Reach Length In Mi.	No. of Samples		Gravel 38.10	19.05	9.525	4.699	2.362	Sand 1.168	0.833	0.589	0.417	0.295	0.208	0.147	0.104	0.074	Silt Clay 0.000
				Size of Sieve Opening in mm.														
Waterproof	13.2	10	(1)*				0.00	0.01	0.05	0.11	1.00	9.11	29.46	35.49	18.57	3.75	1.06	1.38
381.4 - 368.2		0**	(2)				100.00	99.99	99.94	99.83	98.83	89.72	60.25	24.77	6.20	2.44	1.38	0.00
			(3)								100.00	99.34	98.91	88.31	20.87	13.32	9.48	0.00
			(4)				100.00	99.93	99.83	99.66	96.73	67.01	19.81	2.38	0.58	0.22	0.07	0.00
Natchez	13.0	260	(1)	0.00	0.32	1.49	1.69	0.93	1.25	1.99	9.55	28.81	29.14	16.12	5.72	1.54	0.45	1.00
368.2 - 355.2		2**	(2)	100.00	99.68	98.19	96.50	95.57	94.32	92.33	82.78	53.97	24.83	8.71	2.99	1.45	1.00	0.00
Includes discharge range			(3)							100.00	99.80	99.37	96.28	85.90	42.29	19.05	19.05	0.00
			(4)	100.00	83.19	58.93	51.03	49.84	47.85	44.77	30.95	9.95	1.54	0.11	0.00			
St. Catherine	16.6	10	(1)			0.00	0.35	0.45	1.17	0.94	2.30	5.85	8.66	18.19	15.21	4.61	4.00	38.30
355.2 - 338.6		3**	(2)			100.00	99.65	99.20	98.04	97.10	94.81	88.96	80.30	62.11	46.90	42.29	38.30	0.00
			(3)									100.00	99.57	82.95	70.60	62.19	47.49	0.00
			(4)			100.00	96.55	92.70	84.99	78.35	61.62	27.62	4.78	0.93	0.27	0.13	0.09	0.00
Bougere	18.2	4	(1)			0.00	0.55	0.11	0.33	0.52	4.34	17.62	31.65	29.47	11.28	1.52	0.90	1.74
338.6 - 320.4		0**	(2)			100.00	99.45	99.34	99.02	98.50	94.16	76.55	44.90	15.43	4.15	2.63	1.74	0.00
			(3)							100.00	99.81	96.06	78.44	27.35	11.91	8.06	5.43	0.00
			(4)			100.00	97.81	97.38	96.07	94.21	85.36	59.02	20.98	3.06	1.02	0.51	0.30	0.00

* (1) Average percent retained.
(2) Average percent finer.
(3) Maximum percent finer.
(4) Minimum percent finer.

** Number of samples in total finer than 0.074 mm. These are included in (1) and (2) only.

(Sheet 4 of 4)

Table 16

Physical Data of Bed Material (mm Scale) for Mississippi River, Vicksburg District

Potamology Study Reaches Miles AHP		CALENDAR YEAR 1932	1966	1967	1968	1969	1970	1971	1972	1973	1974
CESSIONS-HENRICO 616.0 - 606.0	No. of Samples	5	5	---	---	---	---	---	4	19	7
	D_{84}	0.685	0.713	---	---	---	---	---	0.528	0.560	0.402
	D_{50}	0.378	0.410	---	---	---	---	---	0.335	0.371	0.266
	D_{16}	0.168	0.247	---	---	---	---	---	0.213	0.232	0.149
	Mg	0.389	0.446	---	---	---	---	---	0.310	0.382	0.160
	Ma	0.935	0.726	---	---	---	---	---	0.430	0.579	0.288
	s	2.863	1.655	---	---	---	---	---	0.898	1.437	0.258
SMITH PT.-TERRENE 606.0 - 594.2	No. of Samples	3	4	---	15	136	29	28	28	21	6
	D_{84}	0.541	0.589	---	0.670	0.581	0.656	0.540	0.517	0.586	0.537
	D_{50}	0.296	0.420	---	0.364	0.368	0.377	0.330	0.300	0.324	0.217
	D_{16}	0.174	0.258	---	0.209	0.208	0.211	0.201	0.085	0.028	0.003
	Mg	0.319	0.417	---	0.363	0.351	0.312	0.266	0.181	0.167	0.086
	Ma	0.477	0.503	---	2.122	0.886	1.545	0.510	0.614	0.565	0.652
	s	0.824	0.489	---	6.604	2.973	4.876	1.239	1.919	1.534	2.070
TERRENE-OZARK 594.2 - 581.0	No. of Samples	19	24	28	70	55	44	23	28	47	16
	D_{84}	1.651	0.561	0.709	0.551	0.527	0.525	0.519	0.438	0.472	0.534
	D_{50}	0.361	0.365	0.379	0.349	0.349	0.331	0.302	0.263	0.303	0.315
	D_{16}	0.169	0.232	0.251	0.211	0.222	0.176	0.169	0.123	0.157	0.007
	Mg	0.533	0.391	0.468	0.329	0.329	0.261	0.271	0.199	0.206	0.120
	Ma	2.913	0.703	1.071	0.945	0.554	0.410	0.489	0.305	0.497	0.454
	s	7.114	2.088	2.923	3.466	1.756	0.687	1.198	0.304	1.997	1.050

(Continued)

Note: D_{84}, 84 percent finer than given size; D_{50}, 50 percent finer than given size; D_{16}, 16 percent finer than given size; Mg, geometric mean size, mm; Ma, arithmetric mean size, mm; and s, standard deviation.

(Sheet 1 of 7)

Table 16 (Continued)

Potamology Study Reaches Miles AHP		CALENDAR YEAR 1932	1966	1967	1968	1969	1970	1971	1972	1973	1974
OZARK-EUTAW 581.0 - 565.9	No. of Samples	17	20	40	111	76	91	66	243	312	284
	D_{84}	1.088	0.539	0.671	0.637	0.587	0.558	0.685	0.491	0.540	0.568
	D_{50}	0.357	0.356	0.362	0.357	0.354	0.353	0.339	0.331	0.345	0.299
includes discharge range	D_{16}	0.098	0.225	0.237	0.226	0.213	0.236	0.230	0.225	0.226	0.209
	Mg	0.344	0.314	0.435	0.414	0.346	0.407	0.348	0.339	0.354	0.373
	Ma	2.782	0.771	1.710	1.331	0.893	0.963	0.503	0.529	0.804	1.109
	s	7.064	2.822	5.003	3.987	2.457	3.076	1.614	1.684	2.911	3.714
CHOCTAW BAR 565.9 - 550.4	No. of Samples	14	8	86	75	109	76	23	49	38	22
	D_{84}	0.704	0.700	0.632	0.665	0.555	0.558	0.530	0.556	0.524	0.440
	D_{50}	0.375	0.392	0.347	0.373	0.349	0.345	0.350	0.362	0.366	0.287
	D_{16}	0.217	0.244	0.220	0.245	0.219	0.222	0.220	0.230	0.227	0.168
	Mg	0.461	0.503	0.427	0.450	0.378	0.391	0.328	0.359	0.366	0.230
	Ma	1.828	1.620	1.179	1.095	1.241	1.042	0.618	0.685	0.680	0.427
	s	5.276	4.506	3.520	3.140	4.194	3.490	1.629	2.111	2.355	1.097
GREENVILLE 550.4 - 531.2	No. of Samples	53	48	73	104	123	54	49	7	39	9
	D_{84}	0.897	0.506	0.581	0.541	0.528	0.537	0.558	0.577	0.576	0.417
	D_{50}	0.399	0.326	0.367	0.341	0.338	0.336	0.364	0.393	0.338	0.254
	D_{16}	0.233	0.193	0.240	0.192	0.204	0.185	0.242	0.251	0.216	0.156
	Mg	0.518	0.321	0.420	0.304	0.296	0.279	0.383	0.409	0.418	0.213
	Ma	1.890	0.542	0.991	0.739	0.585	0.551	0.712	0.567	1.242	0.308
	s	5.080	1.902	3.347	2.590	1.829	1.536	2.407	1.246	4.011	0.277
LAKEPORT 531.2 - 524.2	No. of Samples	6	4	21	38	41	19	24	2	6	18
	D_{84}	4.213	0.702	0.549	0.545	0.543	0.547	0.529	0.531	0.455	0.423
	D_{50}	0.426	0.417	0.344	0.351	0.317	0.323	0.351	0.311	0.292	0.299
	D_{16}	0.231	0.292	0.231	0.229	0.151	0.175	0.233	0.217	0.213	0.189
	Mg	0.708	0.492	0.389	0.383	0.274	0.276	0.371	0.353	0.323	0.313
	Ma	3.185	1.072	0.718	0.728	1.079	0.682	0.592	0.587	0.522	0.651
	s	6.938	2.623	1.945	2.516	3.863	1.865	1.943	1.510	1.443	2.064

(Continued)

Table 16 (Continued)

Potamology Study Reaches Miles AHP		CALENDAR YEAR 1932	1966	1967	1968	1969	1970	1971	1972	1973	1974
KENTUCKY BEND 524.2 - 514.8	No. of Samples	8	4	27	69	75	52	68	2	8	9
	D_{84}	0.780	0.516	0.586	0.552	0.544	0.671	0.631	0.542	0.481	0.523
	D_{50}	0.418	0.356	0.385	0.343	0.353	0.385	0.376	0.351	0.326	0.329
	D_{16}	0.242	0.240	0.265	0.202	0.228	0.235	0.245	0.239	0.226	0.218
	M_g	0.514	0.359	0.448	0.323	0.349	0.448	0.432	0.388	0.321	0.349
	M_a	1.723	0.469	0.970	1.108	0.778	1.271	0.886	0.647	0.377	0.530
	s	5.062	1.036	3.156	3.709	2.835	3.904	2.563	1.740	0.347	1.163
CRACRAFT-CAROLINA 514.8 - 506.6	No. of Samples	10	68	35	74	58	18	38	2	6	5
	D_{84}	3.011	0.533	0.635	0.601	0.523	0.421	0.509	0.408	0.578	0.379
	D_{50}	0.385	0.332	0.377	0.353	0.320	0.300	0.327	0.309	0.338	0.245
	D_{16}	0.234	0.192	0.230	0.212	0.210	0.214	0.203	0.220	0.220	0.021
	M_g	0.661	0.283	0.458	0.402	0.345	0.326	0.285	0.304	0.364	0.119
	M_a	3.977	0.584	1.327	1.121	0.650	0.594	0.439	0.322	0.670	0.269
	s	8.608	1.535	4.017	3.519	2.082	1.819	0.809	0.098	1.759	0.411
CAROLINA-BALESHED 506.6 - 495.6	No. of Samples	11	---	8	43	35	11	27	7	20	20
	D_{84}	0.395	---	2.196	0.745	0.646	0.513	0.470	0.779	0.501	0.584
	D_{50}	0.267	---	0.530	0.399	0.385	0.318	0.295	0.383	0.305	0.314
	D_{16}	0.198	---	0.267	0.260	0.261	0.202	0.173	0.237	0.201	0.167
	M_g	0.272	---	0.764	0.511	0.464	0.302	0.298	0.478	0.326	0.288
	M_a	0.313	---	2.219	1.525	1.042	0.491	0.451	1.116	0.970	0.736
	s	0.276	---	5.034	4.507	3.098	1.249	1.186	3.057	3.400	2.525
BALESHED LANDING 495.6 - 485.6	No. of Samples	15	27	53	105	59	43	78	3	8	10
	D_{84}	0.597	0.621	0.569	0.548	0.527	0.546	0.517	0.514	0.504	0.576
	D_{50}	0.378	0.389	0.337	0.348	0.341	0.346	0.304	0.331	0.324	0.374
	D_{16}	0.222	0.228	0.222	0.227	0.221	0.220	0.162	0.227	0.214	0.237
	M_g	0.406	0.410	0.363	0.350	0.367	0.376	0.285	0.343	0.342	0.409
	M_a	0.965	0.721	0.798	0.776	0.798	0.723	0.712	0.391	0.551	0.681
	s	3.335	1.916	2.602	2.346	2.779	2.331	2.552	0.360	1.535	1.657

(Continued)

Table 16 (Continued)

Potamology Study Reaches Miles AHP		CALENDAR YEAR 1932	1966	1967	1968	1969	1970	1971	1972	1973	1974
AJAX BAR 485.6 - 479.8	No. of Samples	3	118	20	55	29	23	37	9	17	28
	D_{84}	17.670	0.524	0.592	0.492	0.418	0.457	0.480	0.479	0.523	0.543
	D_{50}	0.477	0.335	0.354	0.320	0.292	0.306	0.298	0.271	0.301	0.314
	D_{16}	0.293	0.220	0.227	0.214	0.148	0.165	0.180	0.146	0.193	0.191
	Mg	1.155	0.335	0.422	0.315	0.229	0.243	0.272	0.189	0.337	0.311
	Ma	6.421	0.685	1.125	0.800	0.709	0.373	0.376	0.397	0.586	0.814
	s	10.362	2.274	3.814	3.068	2.863	0.723	0.596	0.854	1.615	2.153
AJAX-COTTONWOOD 479.8 - 472.0	No. of Samples	6	---	---	9	33	15	29	1	6	7
	D_{84}	0.818	---	---	0.497	0.524	0.514	0.653	0.384	0.494	0.471
	D_{50}	0.464	---	---	0.343	0.317	0.323	0.337	0.253	0.144	0.106
	D_{16}	0.272	---	---	0.236	0.185	0.167	0.169	0.184	0.027	0.002
	Mg	0.550	---	---	0.339	0.270	0.201	0.342	0.269	0.116	0.044
	Ma	1.583	---	---	0.446	0.452	0.435	1.165	0.331	0.919	0.428
	s	4.676	---	---	0.840	0.963	0.971	3.777	0.578	3.604	1.582
COTTONWOOD BAR 472.0 - 467.8	No. of Samples	3	12	35	43	62	17	29	3	7	7
	D_{84}	0.513	0.643	0.708	0.545	0.514	0.528	0.491	0.407	0.489	0.510
	D_{50}	0.329	0.431	0.355	0.304	0.327	0.263	0.322	0.214	0.276	0.341
	D_{16}	0.224	0.244	0.217	0.184	0.214	0.162	0.199	0.139	0.179	0.230
	Mg	0.336	0.410	0.440	0.311	0.350	0.307	0.330	0.260	0.319	0.350
	Ma	0.405	0.934	1.241	0.786	0.723	0.581	0.689	0.543	0.856	0.412
	s	0.470	3.267	3.848	2.881	2.578	1.863	2.799	1.601	3.606	0.450
COTTONWOOD-BELLE IS. 467.8 - 461.4	No. of Samples	8	---	8	15	3	5	12	5	9	11
	D_{84}	0.723	---	0.540	0.661	0.401	0.906	1.395	0.468	0.571	0.695
	D_{50}	0.418	---	0.268	0.332	0.278	0.365	0.357	0.221	0.348	0.374
	D_{16}	0.221	---	0.163	0.201	0.188	0.194	0.224	0.004	0.217	0.196
	Mg	0.405	---	0.310	0.369	0.285	0.469	0.549	0.078	0.364	0.297
	Ma	1.038	---	0.686	0.603	0.330	1.535	2.018	0.258	0.654	0.885
	s	3.068	---	1.918	1.410	0.343	4.680	4.646	0.283	1.503	2.684

(Continued)

Table 16 (Continued)

Potamology Study Reaches Miles AHP		CALENDAR YEAR 1932	1966	1967	1968	1969	1970	1971	1972	1973	1974
BELLE IS.-MILLIKEN BEND	No. of Samples	10	4	16	18	27	11	16	9	2	3
461.4 - 451.8	D_{84}	19.044	0.578	0.546	0.566	0.564	0.541	0.545	0.977	20.542	0.634
	D_{50}	0.577	0.353	0.373	0.364	0.361	0.350	0.353	0.407	0.547	0.392
	D_{16}	0.342	0.223	0.260	0.229	0.219	0.181	0.227	0.216	0.311	0.237
	Mg	1.415	0.475	0.398	0.381	0.321	0.257	0.381	0.479	1.454	0.402
	Ma	7.092	2.495	0.597	0.674	0.553	0.615	0.670	0.945	7.077	1.119
	s	10.698	7.238	1.479	2.245	1.246	1.702	1.846	1.990	10.790	4.167
MILLIKEN BEND-VICKSBURG	No. of Samples	37	---	---	89	89	80	87	237	397	255
451.8 - 435.0	D_{84}	1.051	---	---	0.539	0.588	0.799	0.638	0.673	1.052	0.720
	D_{50}	0.371	---	---	0.346	0.379	0.395	0.392	0.404	0.489	0.422
includes discharge range	D_{16}	0.195	---	---	0.200	0.224	0.248	0.235	0.265	0.324	0.256
	Mg	0.525	---	---	0.283	0.363	0.495	0.378	0.472	0.663	0.438
	Ma	3.086	---	---	0.560	0.715	1.647	0.664	1.007	1.936	0.875
	s	7.533	---	---	1.621	2.037	4.643	1.576	2.778	4.929	2.253
RACETRACK-TOWHEAD	No. of Samples	23	9	---	4	8	8	8	11	10	16
435.0 - 422.8	D_{84}	0.530	0.456	---	0.532	1.565	0.556	0.582	0.468	0.401	0.379
	D_{50}	0.313	0.294	---	0.326	0.409	0.324	0.345	0.294	0.248	0.241
	D_{16}	0.191	0.182	---	0.225	0.285	0.219	0.198	0.207	0.154	0.158
	Mg	0.317	0.324	---	0.348	0.676	0.396	0.364	0.283	0.232	0.233
	Ma	0.740	1.197	---	0.407	3.142	1.068	0.561	0.415	0.345	0.294
	s	2.742	4.686	---	0.362	7.446	3.500	1.391	0.995	0.911	0.537
POINT PLEASANT	No. of Samples	13	13	---	---	---	104	144	17	12	16
422.8 - 407.4	D_{84}	0.533	0.529	---	---	---	0.631	0.521	0.485	0.432	0.546
	D_{50}	0.256	0.351	---	---	---	0.353	0.310	0.249	0.210	0.308
	D_{16}	0.094	0.234	---	---	---	0.194	0.174	0.147	0.003	0.088
	Mg	0.195	0.384	---	---	---	0.379	0.305	0.284	0.072	0.187
	Ma	0.486	0.761	---	---	---	1.389	0.899	1.301	0.375	0.561
	s	1.680	2.174	---	---	---	4.350	3.386	4.943	1.201	1.984

(Continued)

(Sheet 5 of 7)

Table 16 (Continued)

Potamology Study Reaches Miles AHP		CALENDAR YEAR 1932	1966	1967	1968	1969	1970	1971	1972	1973	1974
GRAND GULF 407.4 - 395.2	No. of Samples	6	---	---	---	---	57	62	4	5	6
	D_{84}	0.577	---	---	---	---	0.466	0.504	0.517	0.541	0.721
	D_{50}	0.310	---	---	---	---	0.302	0.286	0.325	0.331	0.306
	D_{16}	0.134	---	---	---	---	0.192	0.148	0.162	0.217	0.214
	M_g	0.333	---	---	---	---	0.260	0.228	0.311	0.379	0.443
	M_a	1.858	---	---	---	---	0.384	0.590	0.434	0.800	2.553
	s	5.560	---	---	---	---	0.845	2.131	0.873	2.182	6.822
RODNEY 395.2 - 381.4	No. of Samples	5	3	---	52	107	90	43	51	14	22
	D_{84}	3.394	0.367	---	0.514	0.551	0.598	0.531	0.488	0.498	0.378
	D_{50}	0.451	0.258	---	0.307	0.328	0.349	0.302	0.290	0.310	0.229
	D_{16}	0.279	0.186	---	0.209	0.209	0.209	0.178	0.169	0.181	0.029
	M_g	0.732	0.258	---	0.328	0.365	0.360	0.328	0.281	0.296	0.119
	M_a	3.617	0.280	---	0.587	0.815	0.886	0.545	0.409	0.387	0.311
	s	7.904	0.131	---	2.082	2.662	3.100	1.365	0.870	0.764	0.915
WATERPROOF 381.4 - 368.2	No. of Samples	4	4	---	---	---	63	21	66	6	10
	D_{84}	0.540	0.414	---	---	---	0.403	0.407	0.404	0.409	0.390
	D_{50}	0.320	0.330	---	---	---	0.257	0.275	0.277	0.256	0.267
	D_{16}	0.199	0.217	---	---	---	0.159	0.174	0.173	0.164	0.177
	M_g	0.327	0.319	---	---	---	0.237	0.270	0.264	0.269	0.255
	M_a	0.431	0.417	---	---	---	0.455	0.345	0.407	0.389	0.288
	s	0.619	1.026	---	---	---	1.927	0.696	1.437	0.965	0.122
NATCHEZ 368.2 - 355.2 includes discharge range	No. of Samples	10	---	---	---	---	76	31	298	384	260
	D_{84}	0.576	---	---	---	---	0.489	0.499	0.523	0.574	0.616
	D_{50}	0.320	---	---	---	---	0.314	0.307	0.336	0.394	0.398
	D_{16}	0.214	---	---	---	---	0.208	0.169	0.217	0.273	0.244
	M_g	0.378	---	---	---	---	0.292	0.230	0.339	0.450	0.420
	M_a	1.017	---	---	---	---	0.431	0.922	0.514	1.044	0.869
	s	3.550	---	---	---	---	0.893	3.929	1.469	3.361	2.470

(Continued)

(Sheet 6 of 7)

Table 16 (Concluded)

Potamology Study Reaches Miles AHP		CALENDAR YEAR 1932	1966	1967	1968	1969	1970	1971	1972	1973	1974
ST. CATHERINE 355.2 - 338.6	No. of Samples	10	---	---	---	---	---	22	80	13	10
	D_{84}	0.497	---	---	---	---	---	0.387	0.399	0.507	0.342
	D_{50}	0.307	---	---	---	---	---	0.251	0.254	0.279	0.158
	D_{16}	0.160	---	---	---	---	---	0.161	0.161	0.167	0.002
	Mg	0.311	---	---	---	---	---	0.288	0.229	0.253	0.052
	Ma	0.633	---	---	---	---	---	0.277	0.328	1.036	0.243
	s	2.550	---	---	---	---	---	0.171	0.641	4.057	0.522
BOUGERE 338.6 - 320.4	No. of Samples	5	---	---	---	---	---	---	61	19	4
	D_{84}	0.626	---	---	---	---	---	---	0.536	0.534	0.483
	D_{50}	0.348	---	---	---	---	---	---	0.321	0.304	0.312
	D_{16}	0.176	---	---	---	---	---	---	0.188	0.177	0.209
	Mg	0.355	---	---	---	---	---	---	0.302	0.329	0.299
	Ma	0.502	---	---	---	---	---	---	0.622	0.511	0.383
	s	0.750	---	---	---	---	---	---	2.153	1.102	0.536

(Sheet 7 of 7)

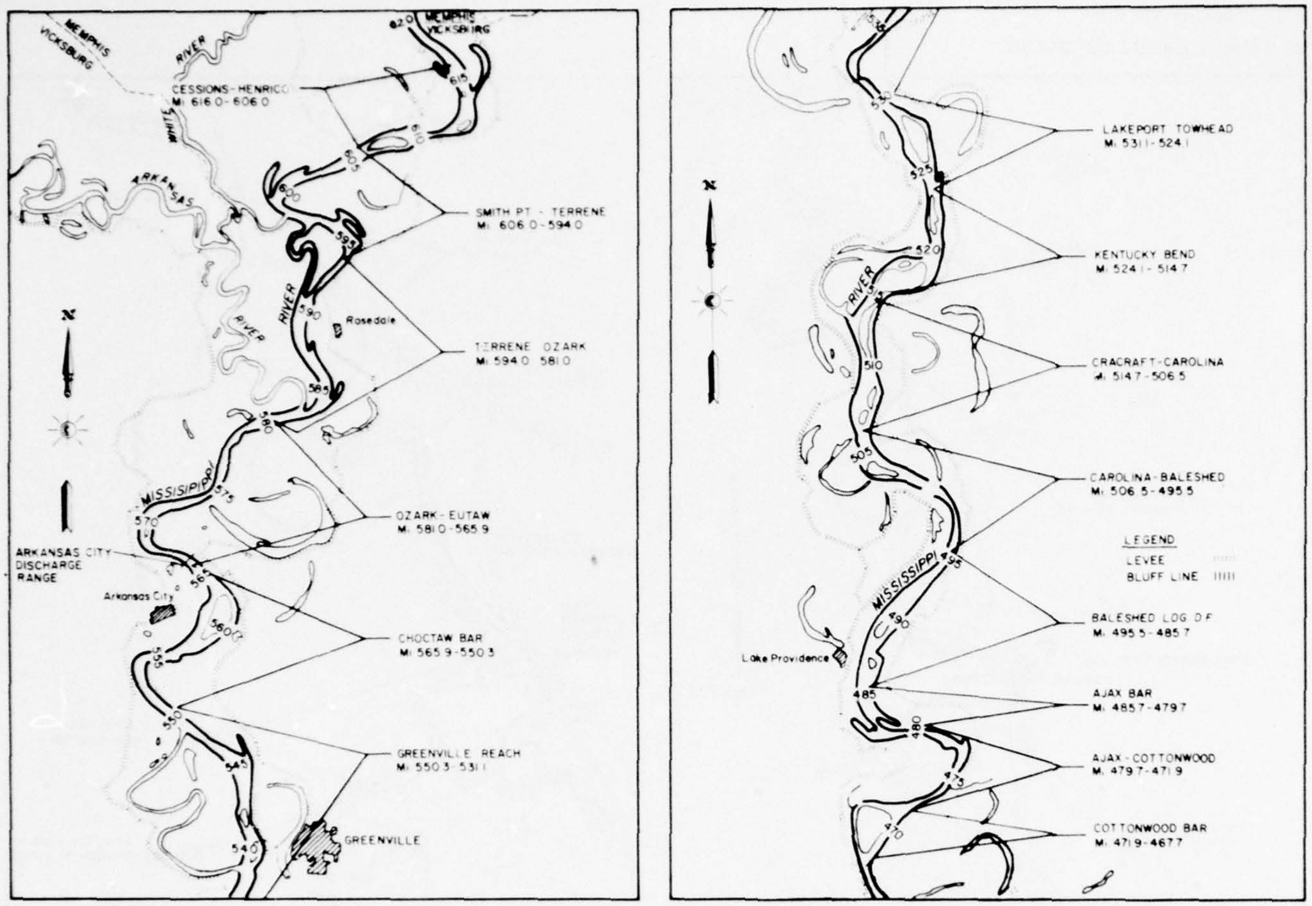
Table 17

Scale of Sizes in Metric (SI) and U. S. Customary Units

Class and Subclass	Metric (SI) mm	U. S. Customary in.
Boulders		
Very large	4,096-2,048	160-80
Large	2,048-1,024	80-40
Medium	1,024-512	40-20
Small	512-256	20-10
Cobbles		
Large	256-128	10-5
Small	128-64	5-2.5
Gravel		
Very coarse	64-32	2.5-1.3
Coarse	32-16	1.3-0.6
Medium	16-8	0.6-0.3
Fine	8-4	0.3-0.16
Very fine	4-2	0.16-0.078
Sand		
Very coarse	2.000-1.000	0.078-0.039
Coarse	1.000-0.500	0.039-0.020
Medium	0.500-0.250	0.020-0.0098
Fine	0.250-0.125	0.0098-0.0049
Very fine	0.125-0.062	0.0049-0.0025
Silt		
Coarse	0.062-0.031	0.0025-0.0012
Medium	0.031-0.016	0.0012-0.00062
Fine	0.016-0.008	0.00062-0.00031
Very fine	0.008-0.004	0.00031-0.00015
Clay		
Coarse	0.004-0.0020	0.00015-0.000077
Medium	0.0020-0.0010	0.000077-0.000038
Fine	0.0010-0.0005	0.000038-0.000019
Very fine	0.0005-0.00024	0.000019-0.000010

Note: After Subcommittee on Sediment Terminology, A.G.U., 1947.

Appendix B: Plates

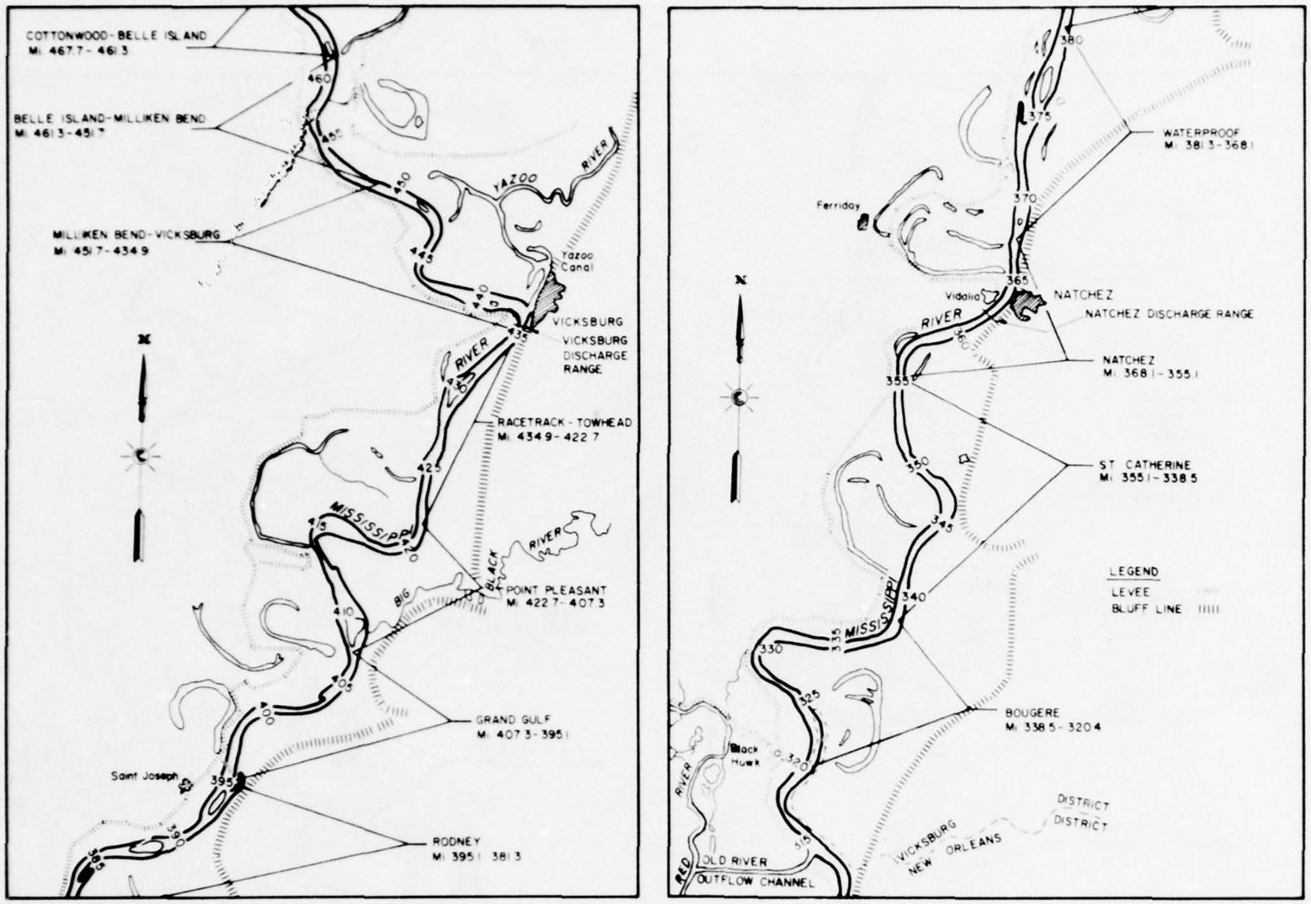


VICKSBURG DISTRICT INDEX MAP

MILE 620 TO 465

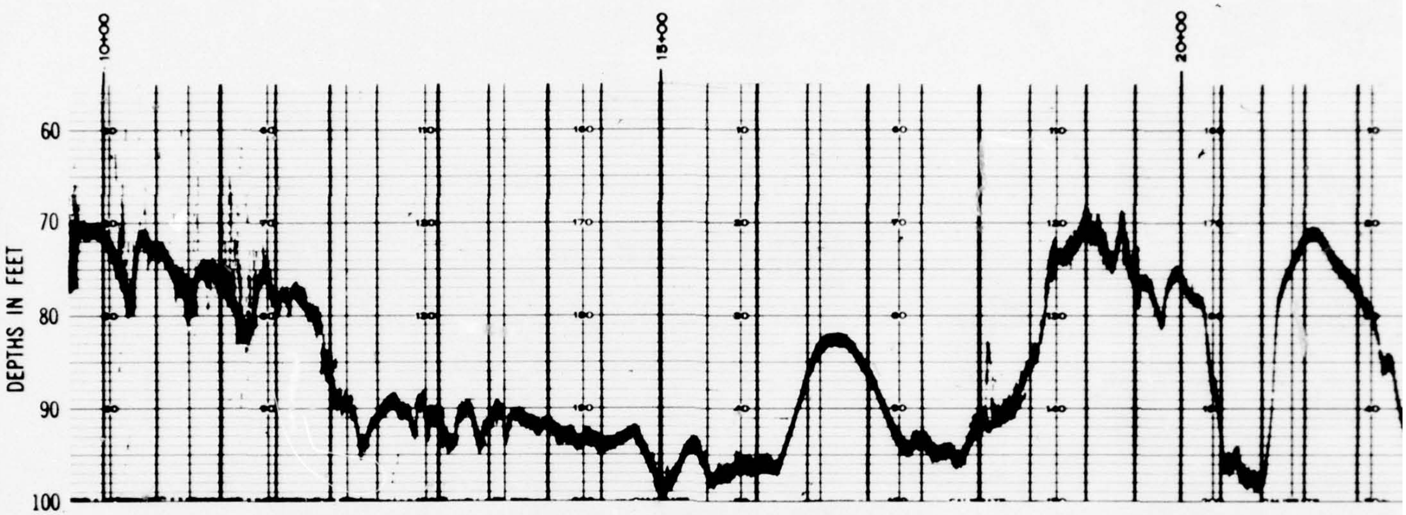
PLATE 1

PLATE 2

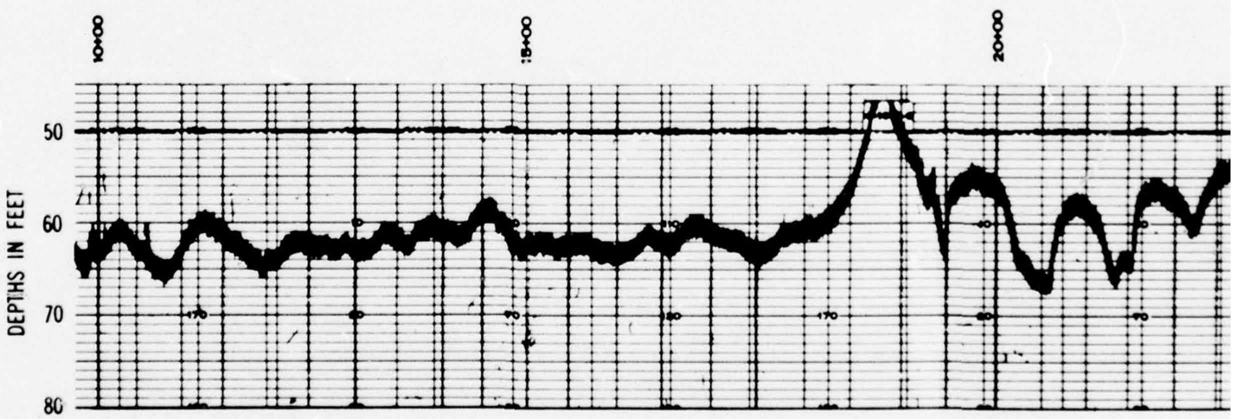


VICKSBURG DISTRICT INDEX MAP

MILE 465 TO 300

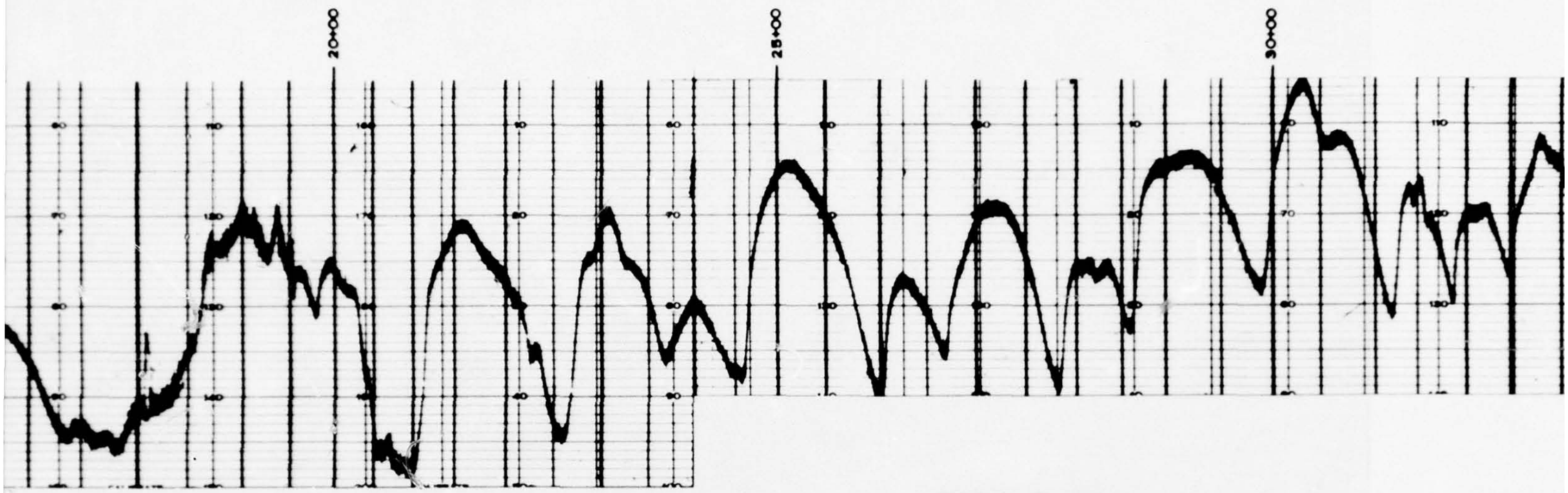

10+00
15+00
20+00
DEPTHS IN FEET
60
70
80
90
100

⊥30 FEET
M.S.L.


10+00
15+00
20+00
DEPTHS IN FEET
50
60
70
80

STATIONS IN METERS

FLOW



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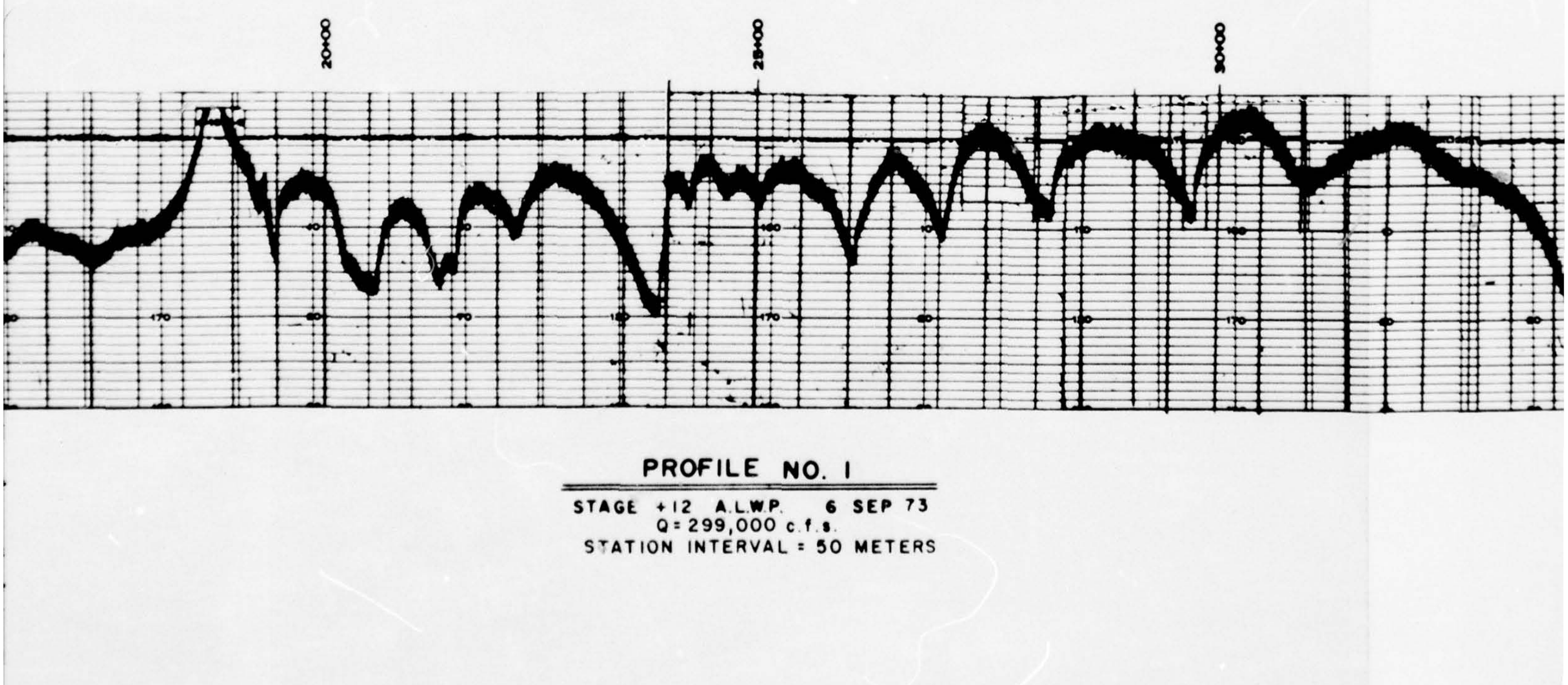
STAGE +36 A.L.W.P. 20 FEB 73

Q = 1,130,000 c.f.s.

STATION INTERVAL = 50 METERS



PROFILE NO. 1

STAGE +12 A.L.W.P. 6 SEP 73

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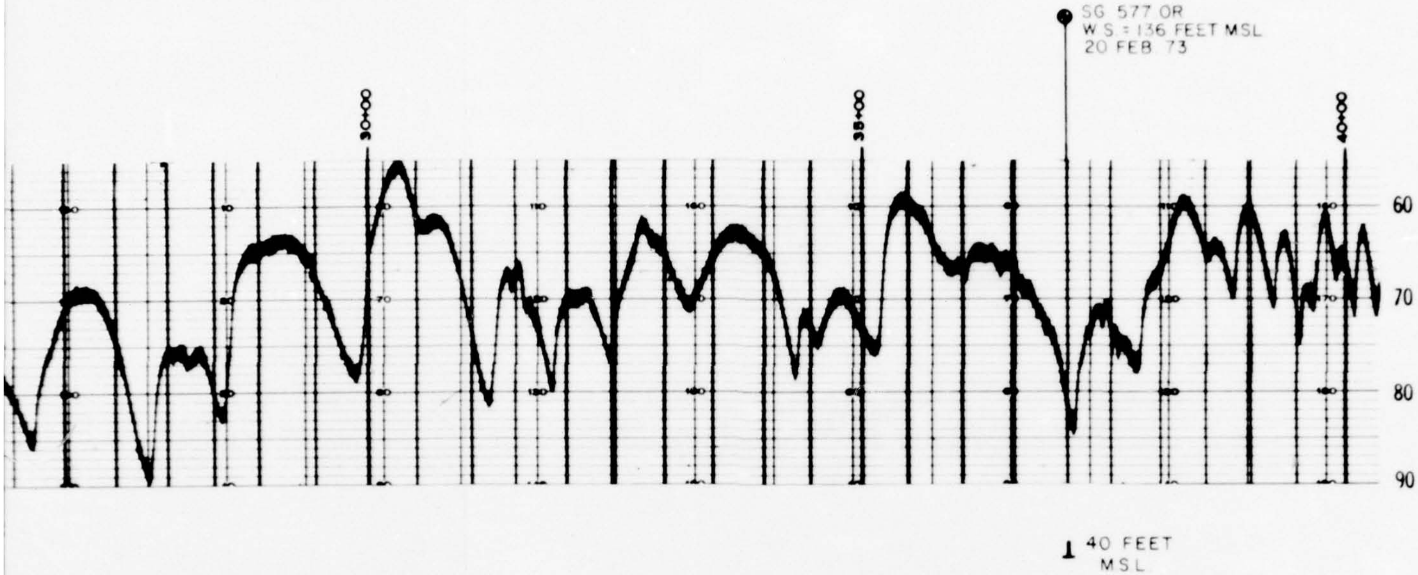
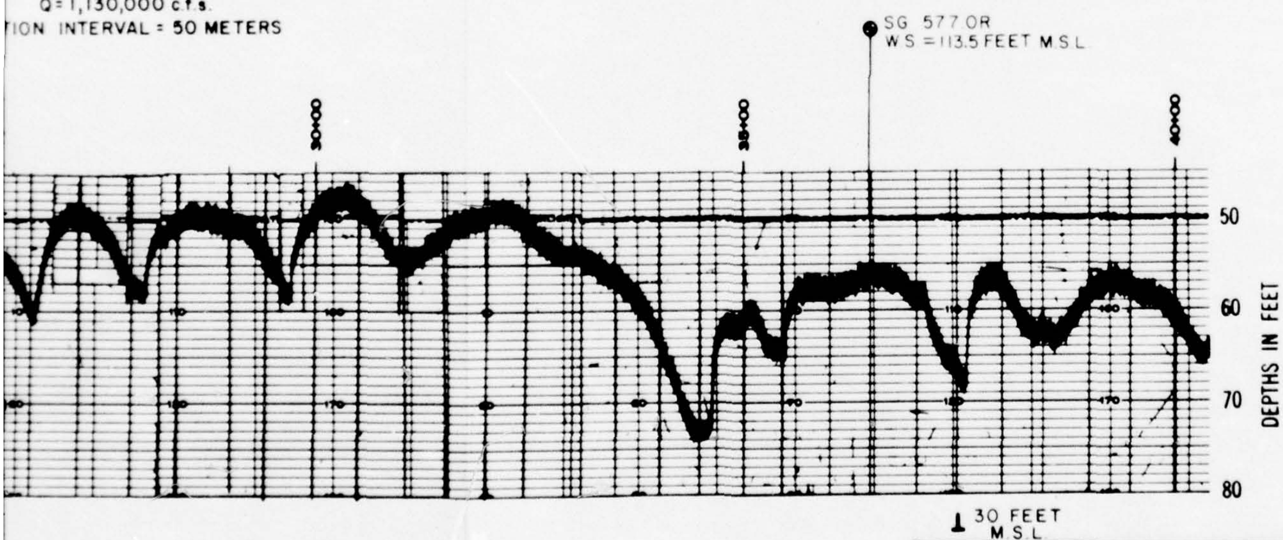
STATION INTERVAL = 50 METERS



PROFILE NO. 1

E +36 ALWP. 20 FEB 73
Q= 1,130,000 c.f.s.
TION INTERVAL = 50 METERS



3

RS

MISSISSIPPI RIVER

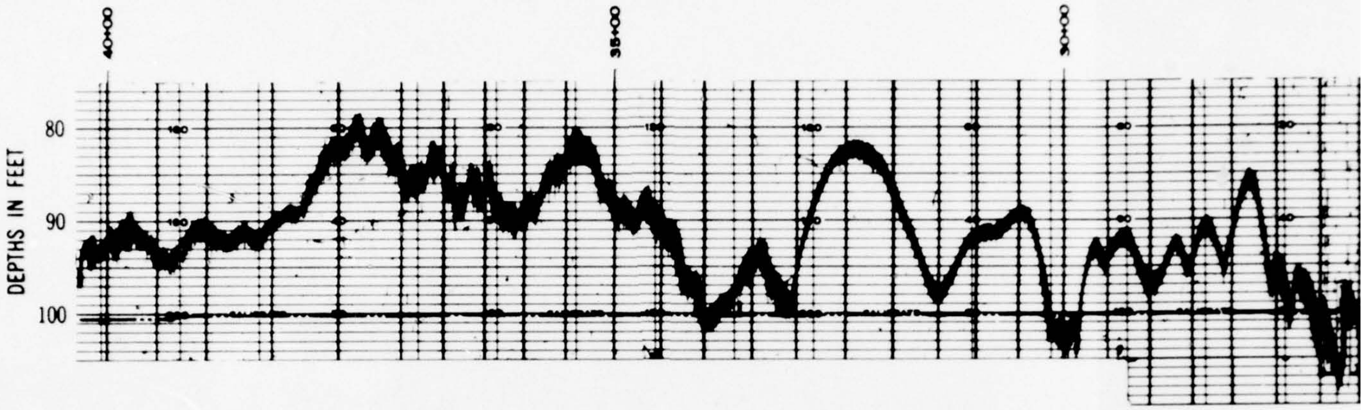
POTAMOLOGY STUDIES

LONGITUDINAL PROFILE COMPARISON

HIGH AND LOW STAGE

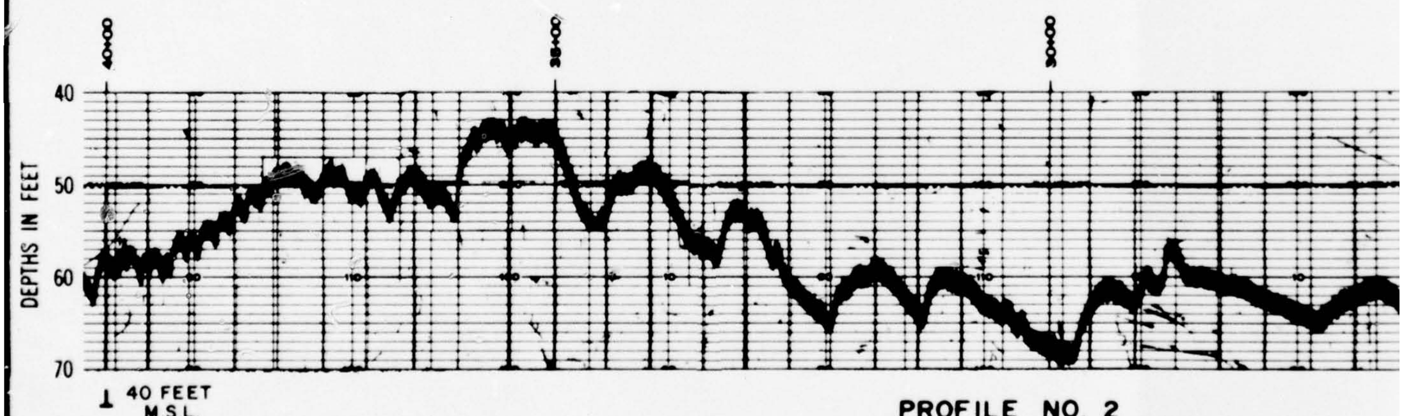
OZARK-EUTAW

1973



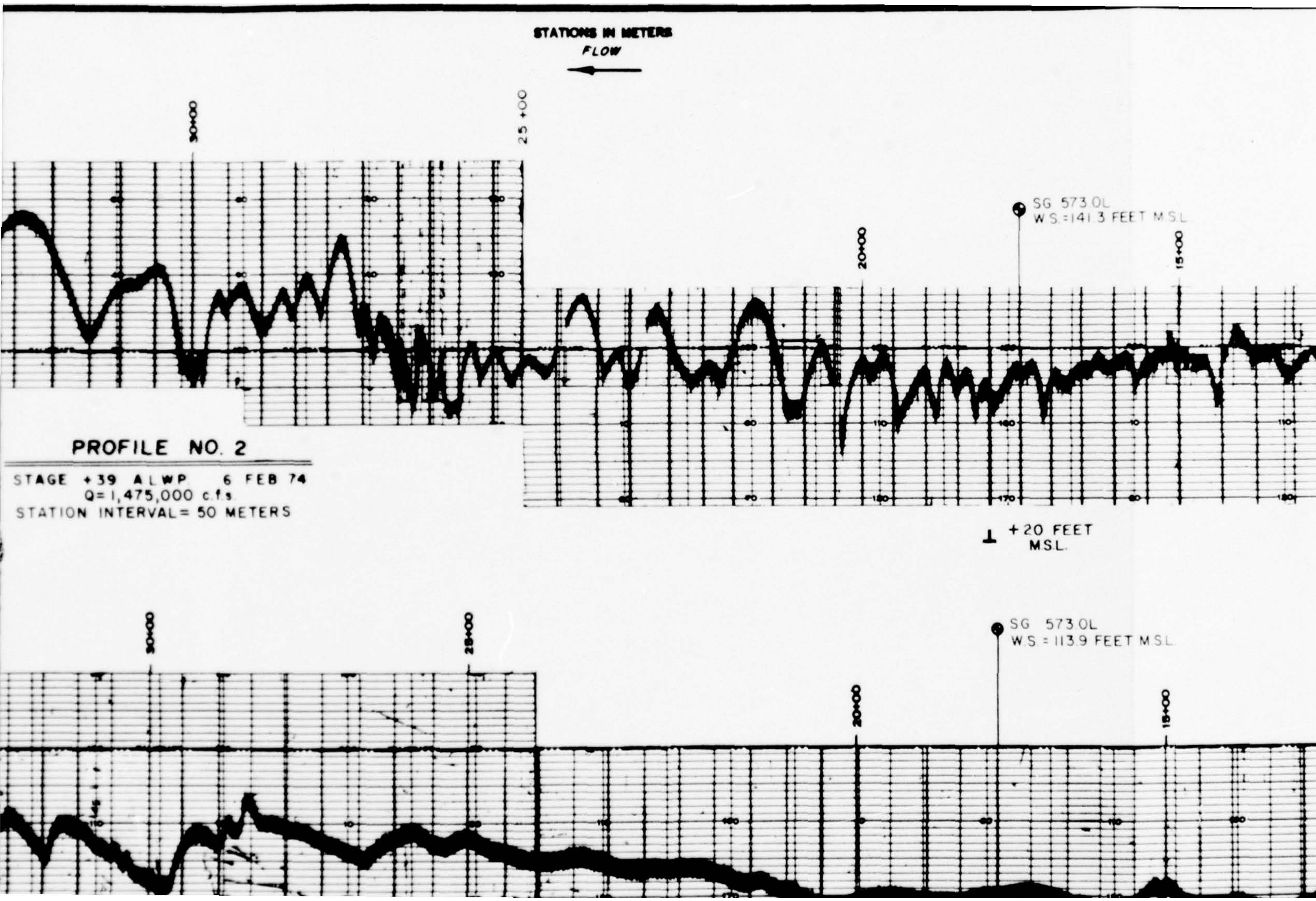
PROFILE NO. 2

STAGE +39 A.L.W.P. 6 FEB 74
Q= 1,475,000 c.f.s.
STATION INTERVAL= 50 METERS

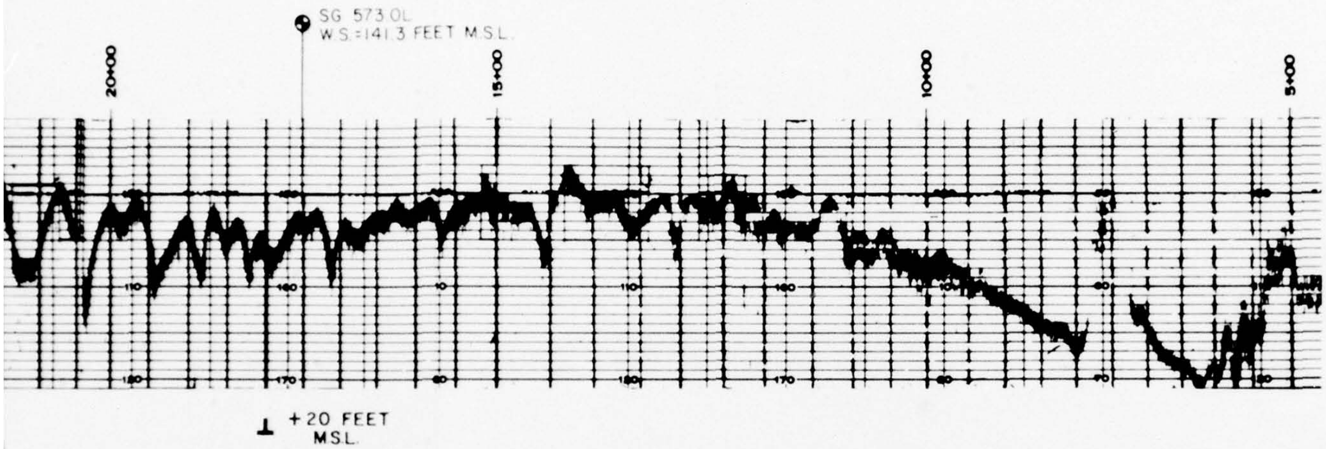


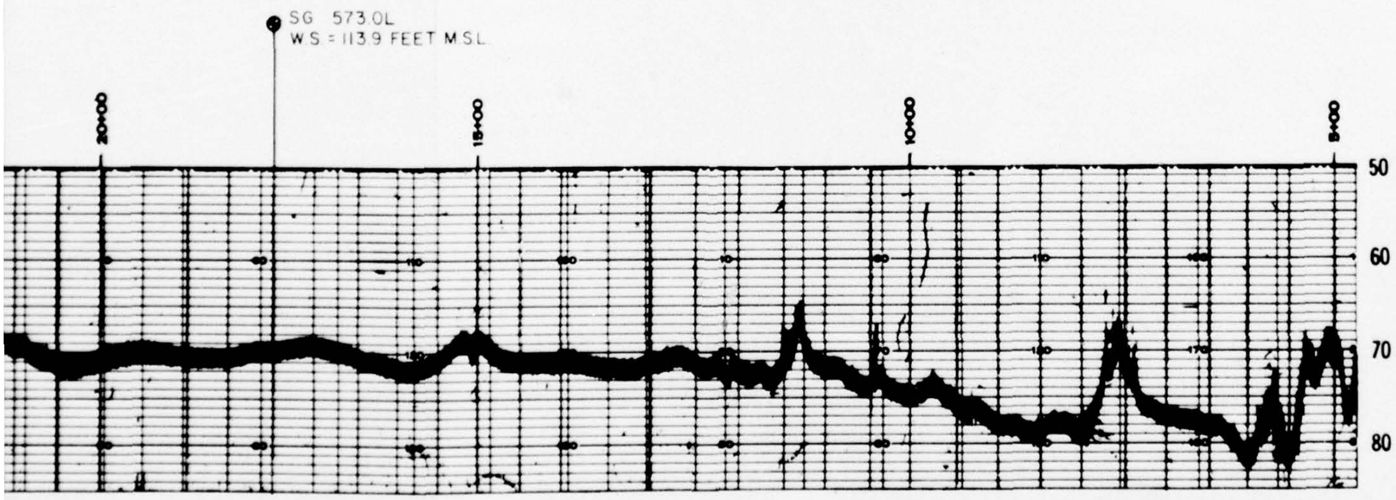
PROFILE NO. 2

STAGE +12 A.L.W.P. 6 SEP 73
Q= 299,000 c.f.s.
STATION INTERVAL= 50 METERS



STATIONS IN METERS
FLOW
30+00
25+00
SG 573.0L
W.S.=141.3 FEET M.S.L.
20+00
15+00
PROFILE NO. 2
STAGE +39 A.L.W.P. 6 FEB 74
Q=1,475,000 c.f.s.
STATION INTERVAL= 50 METERS
+20 FEET
M.S.L.
30+00
25+00
SG 573.0L
W.S.=113.9 FEET M.S.L.
20+00
15+00





20 FEET M.S.L.

MISSISSIPPI RIVER

POTAMOLOGY STUDIES

LONGITUDINAL PROFILE COMPARISON

HIGH AND LOW STAGE

OZARK-EUTAW
1973-74

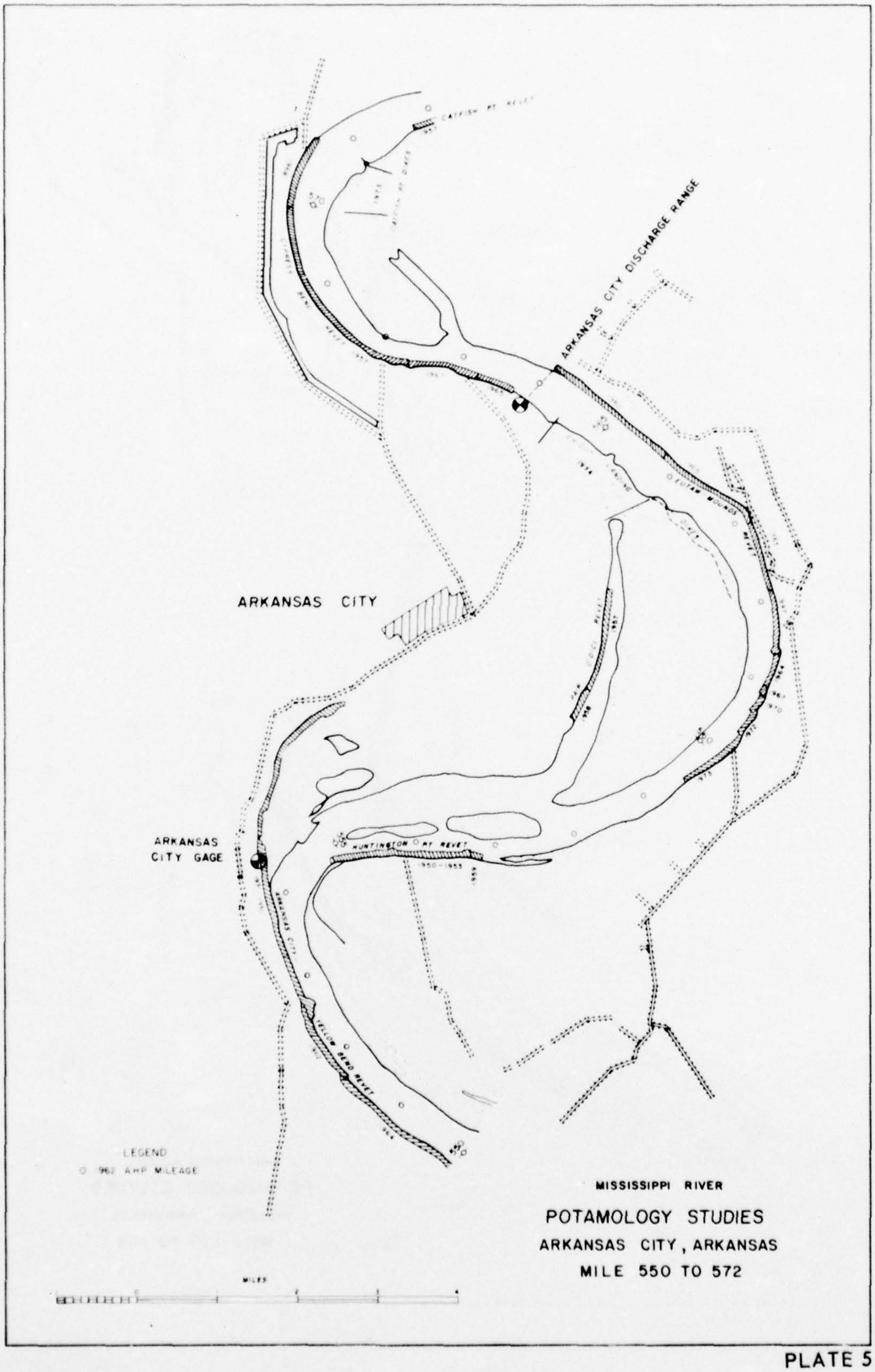
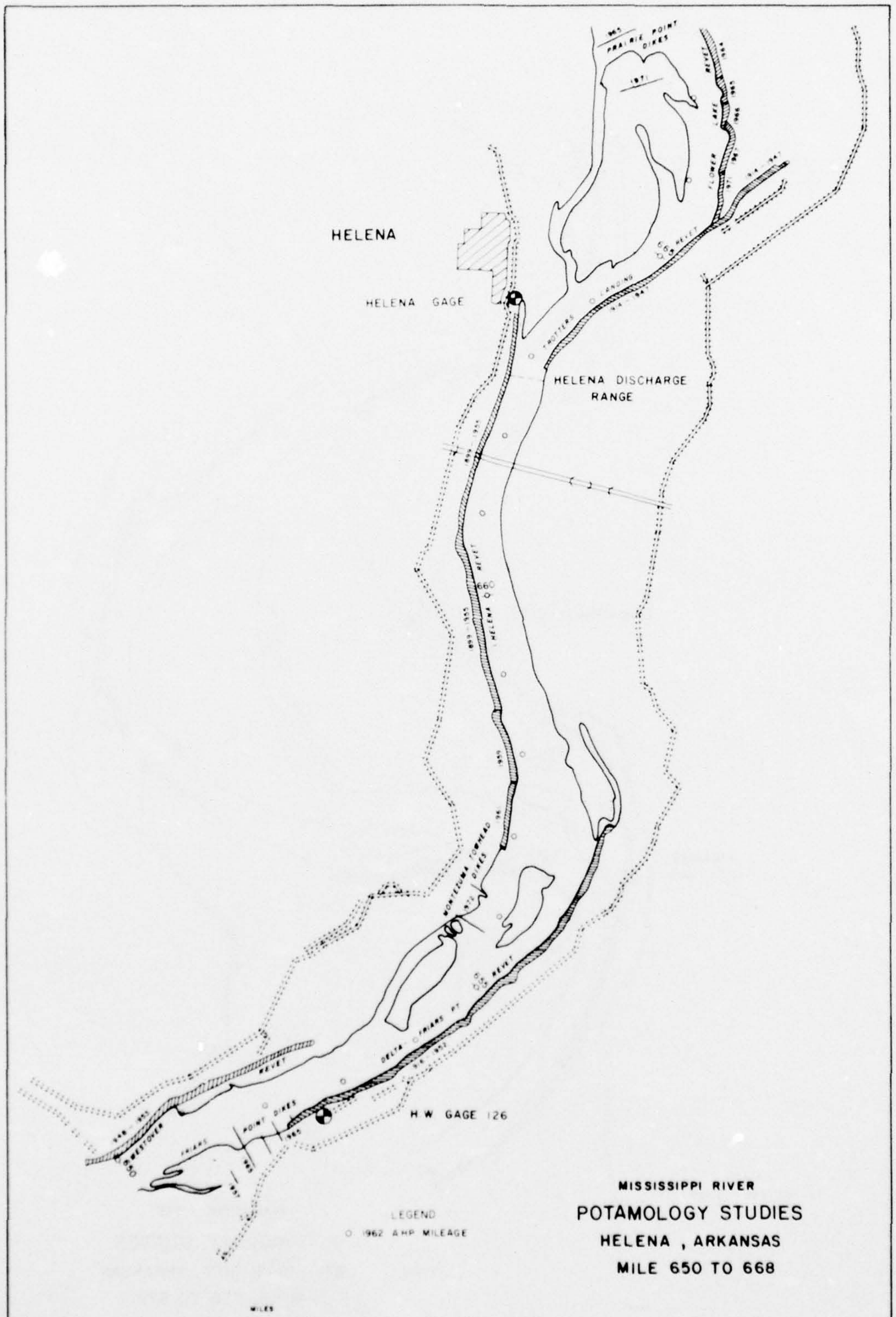

ARKANSAS CITY DISCHARGE RANGE
ARKANSAS CITY
ARKANSAS
CITY GAGE
HUNTINGTON PT REVET
1950-1953
LEGEND
962 AHP MILEAGE
MILES
MISSISSIPPI RIVER
POTAMOLOGY STUDIES
ARKANSAS CITY, ARKANSAS
MILE 550 TO 572

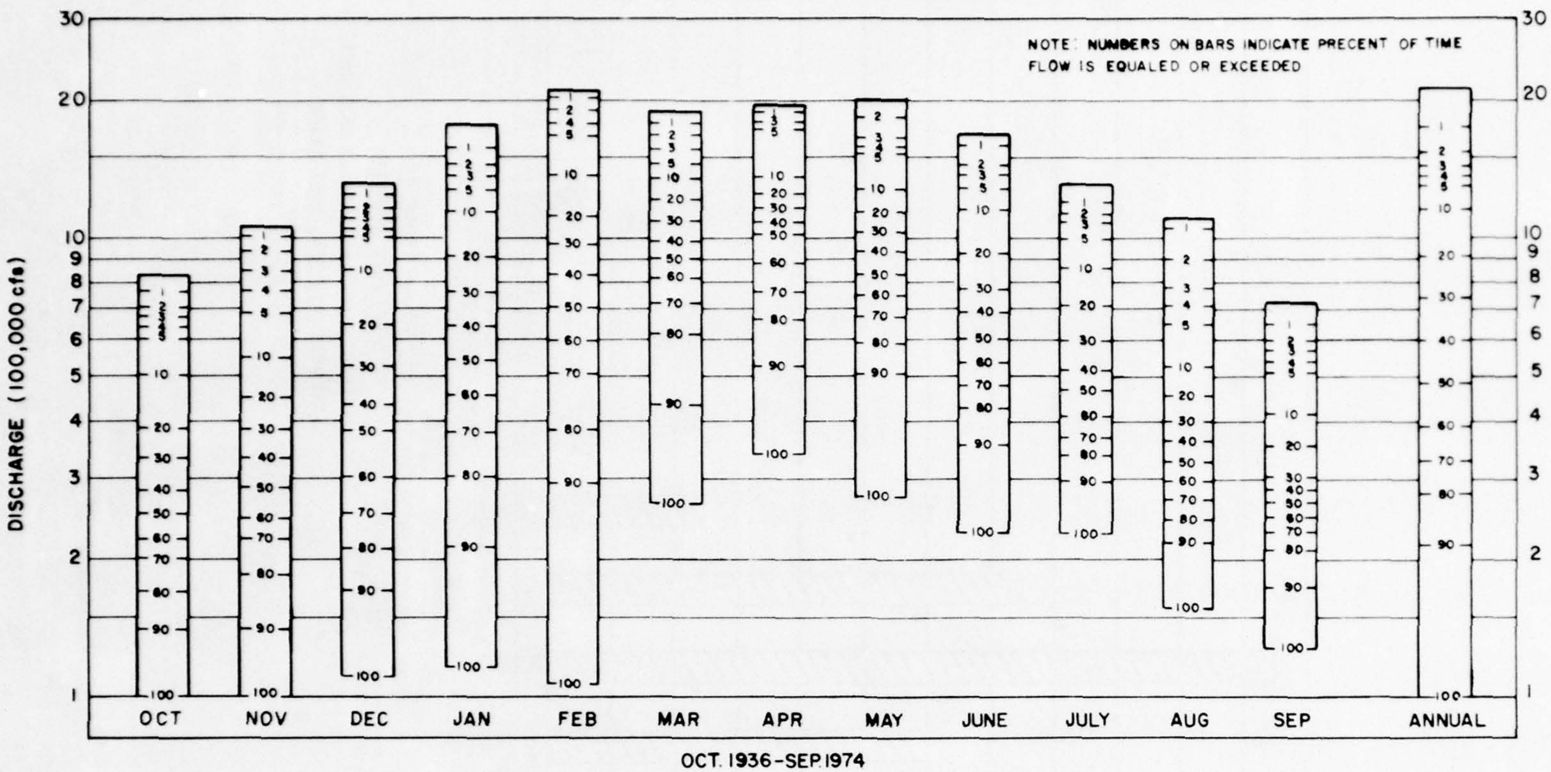
PLATE 5



HELENA
HELENA GAGE
HELENA DISCHARGE RANGE
PRAIRIE POINT DIKES
TROTTERS LANDING
FLOWER LAKE REVET
HELENA REVET
MONTEZUMA TOWHEAD DIKES
DELTA FRIARS PT REVET
H.W. GAGE 126
FRIARS POINT DIKES
REVET
LEGEND
○ 1962 AHP MILEAGE
MILES
MISSISSIPPI RIVER
POTAMOLOGY STUDIES
HELENA, ARKANSAS
MILE 650 TO 668

PLATE 6

Appendix C: Figures



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

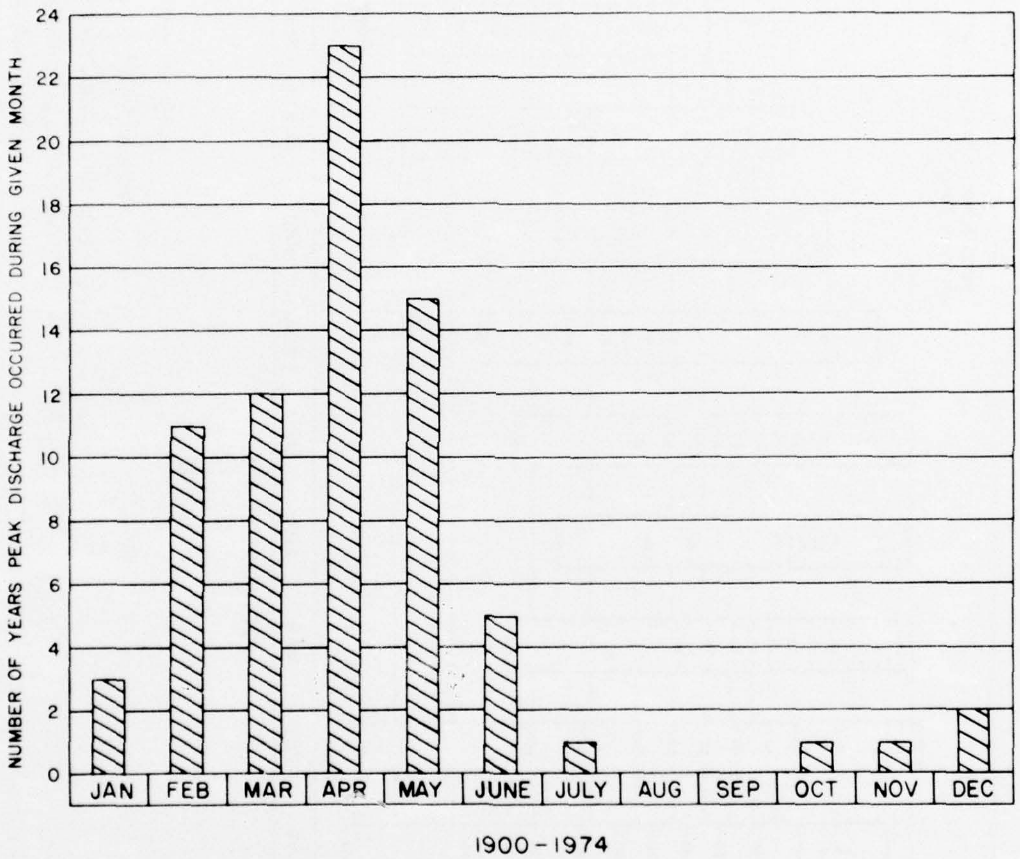
DISCHARGE DURATION BY MONTHS

VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

OCT. 1936 - SEP. 1974

FIGURE 1



MISSISSIPPI RIVER

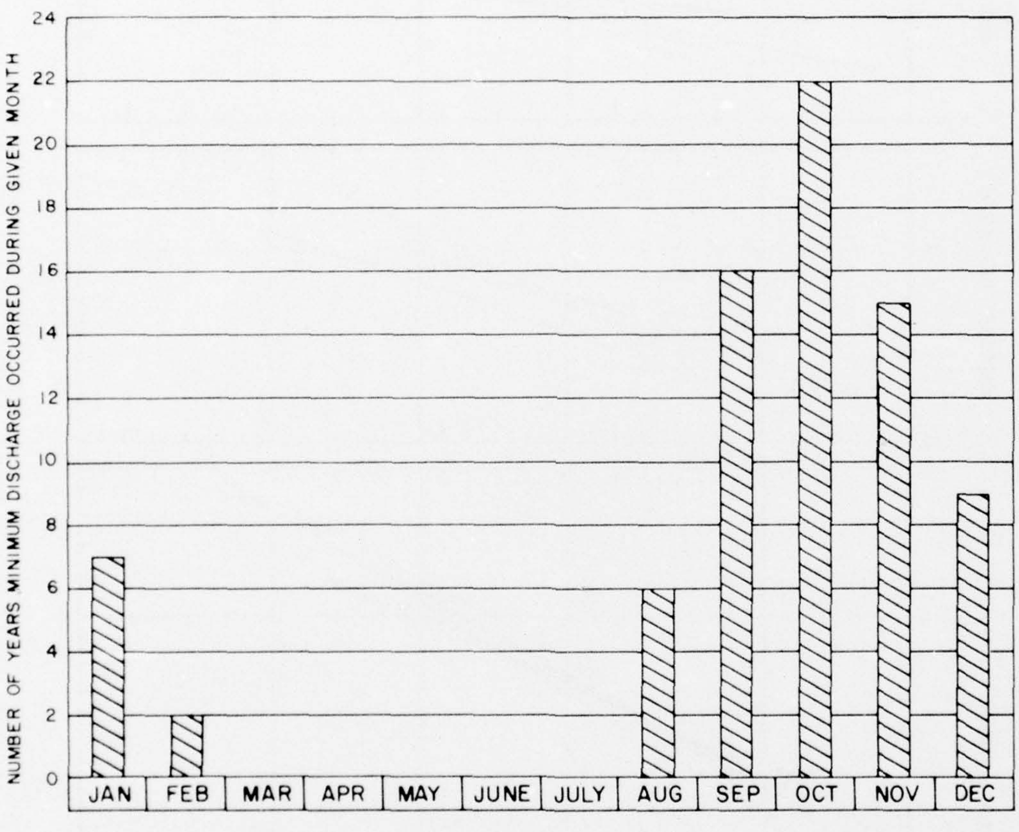
POTAMOLOGY STUDIES

OCCURRENCE OF PEAK DISCHARGES, 1900-1974

ARKANSAS CITY DISCHARGE RANGE

MILE 565.9 AHP

FIGURE 2



1900 - 1974

MISSISSIPPI RIVER

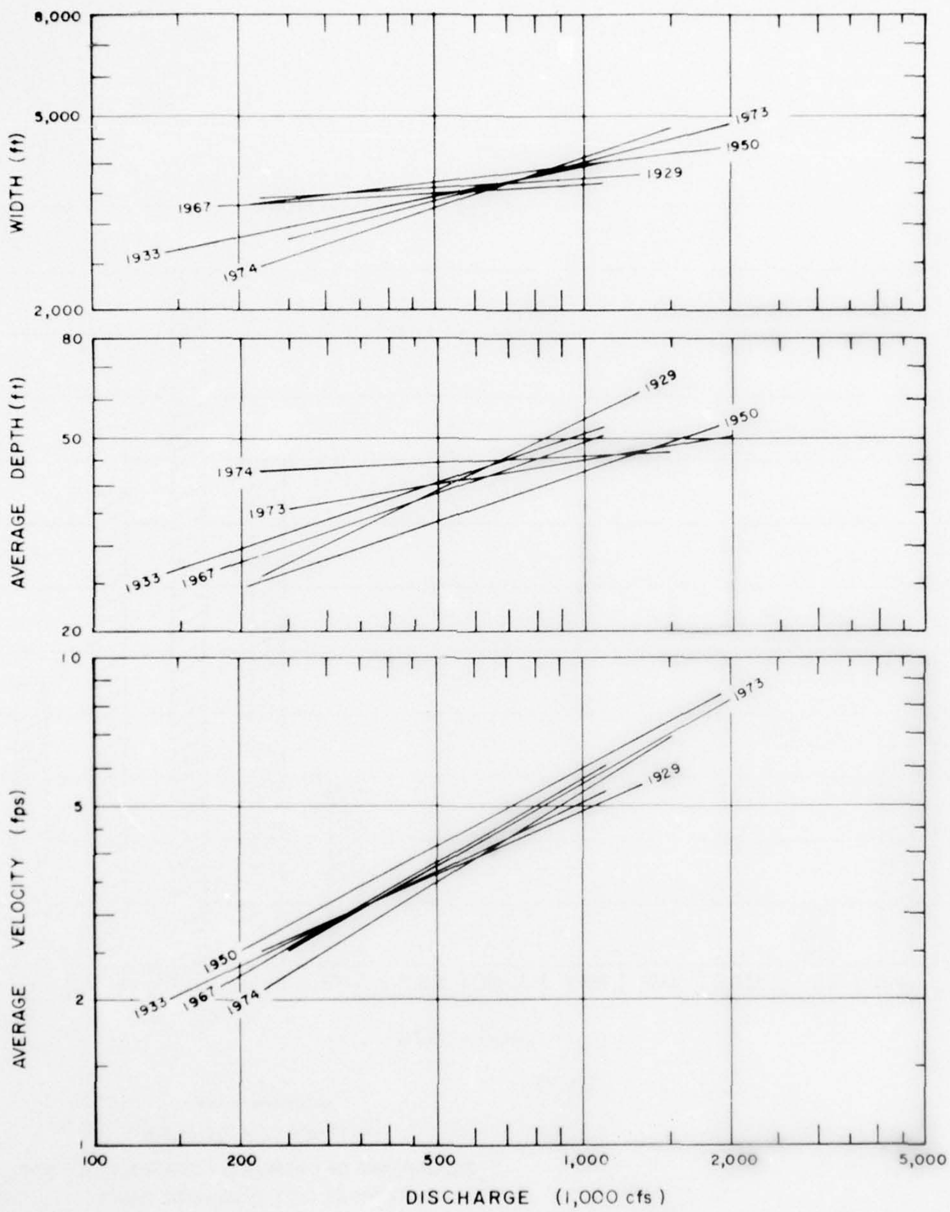
POTAMOLOGY STUDIES

OCCURRENCE OF MINIMUM DISCHARGES, 1900-1974

ARKANSAS CITY DISCHARGE RANGE

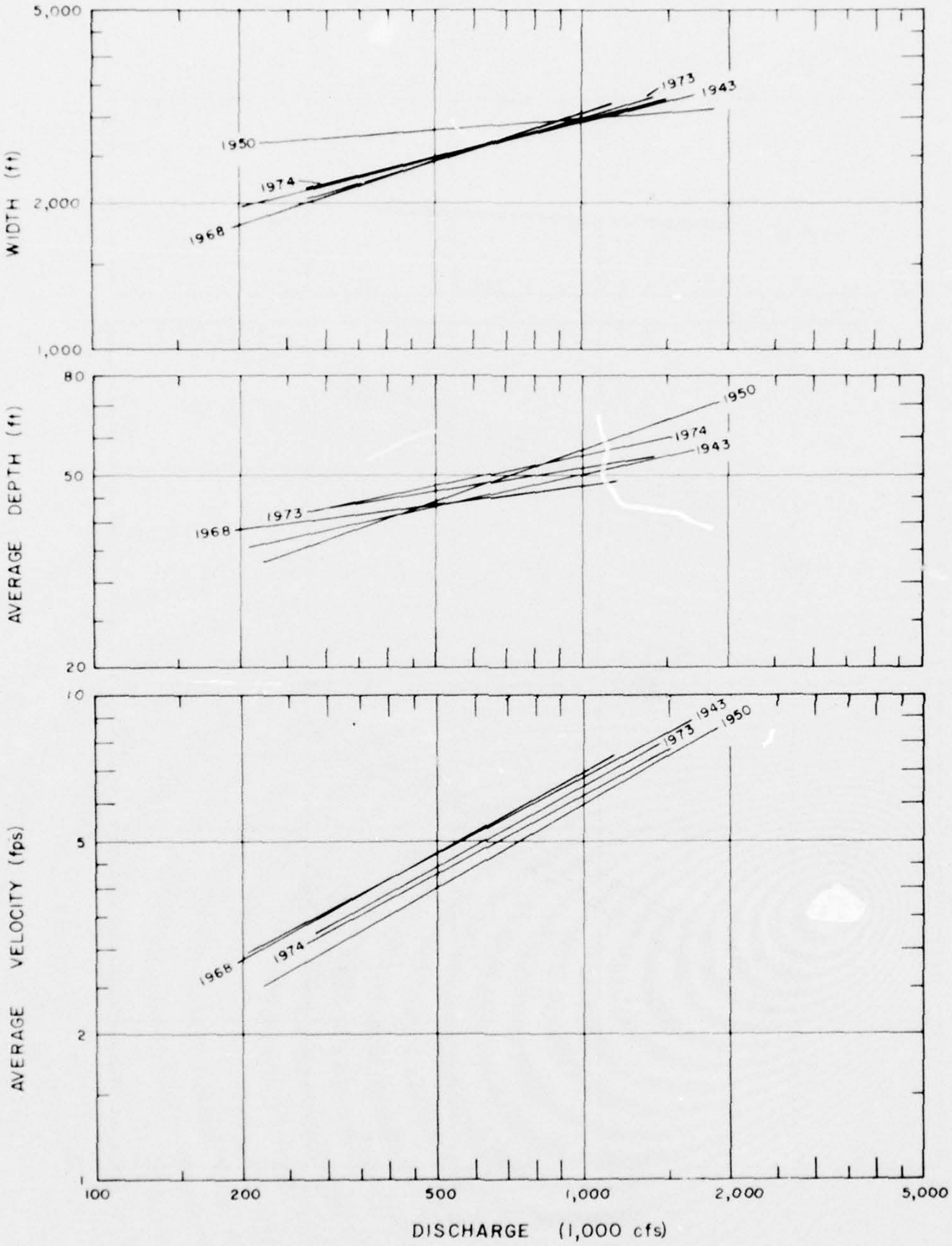
MILE 565.9 AHP

FIGURE 3



MISSISSIPPI RIVER
POTAMOLOGY STUDIES
RELATION OF WIDTH, DEPTH, AND VELOCITY TO DISCHARGE BY WATER YEAR
ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 AHP

FIGURE 4



MISSISSIPPI RIVER

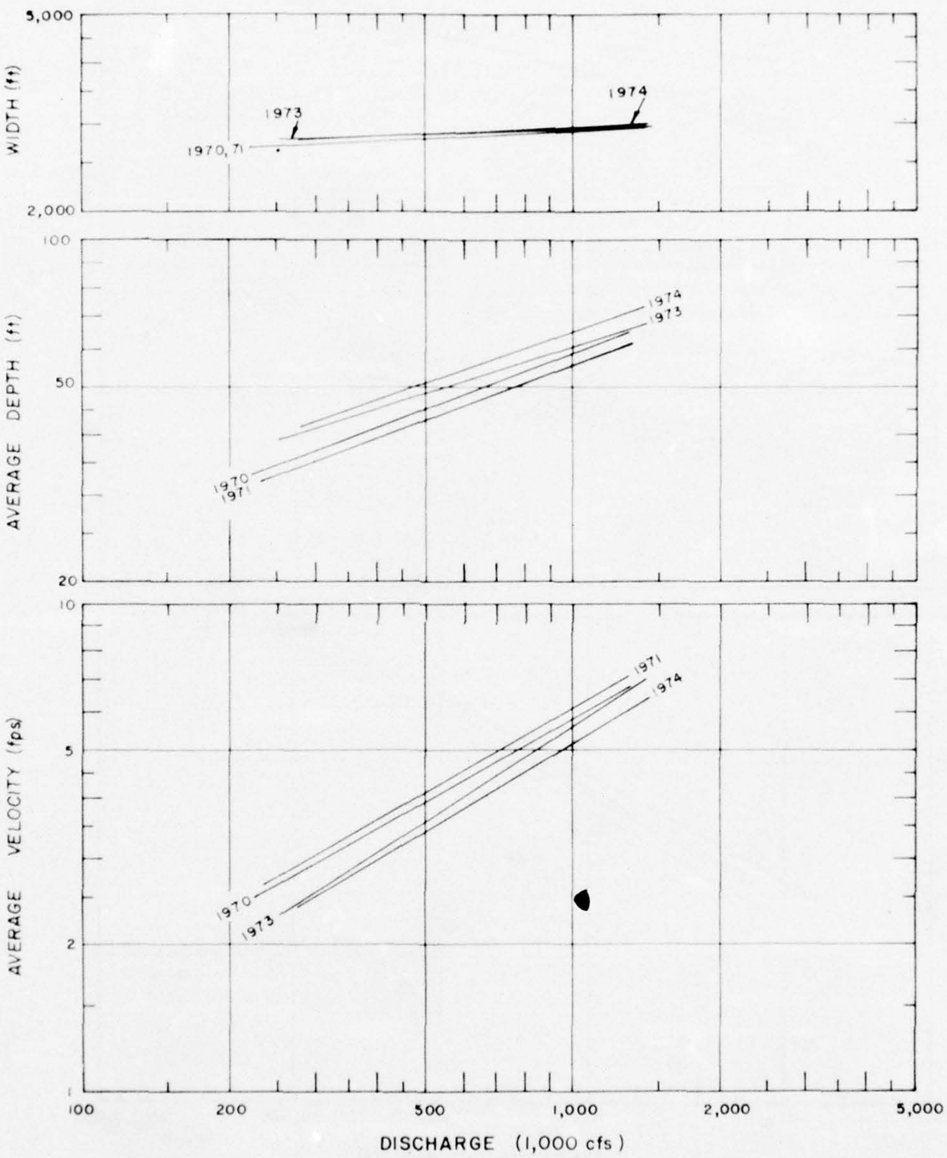
POTAMOLOGY STUDIES

RELATION OF WIDTH, DEPTH, AND VELOCITY TO DISCHARGE BY WATER YEAR

VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

FIGURE 5



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

RELATION OF WIDTH, DEPTH, AND VELOCITY TO DISCHARGE BY WATER YEAR

NATCHEZ DISCHARGE RANGE

MILE 362.34 AHP

FIGURE 6

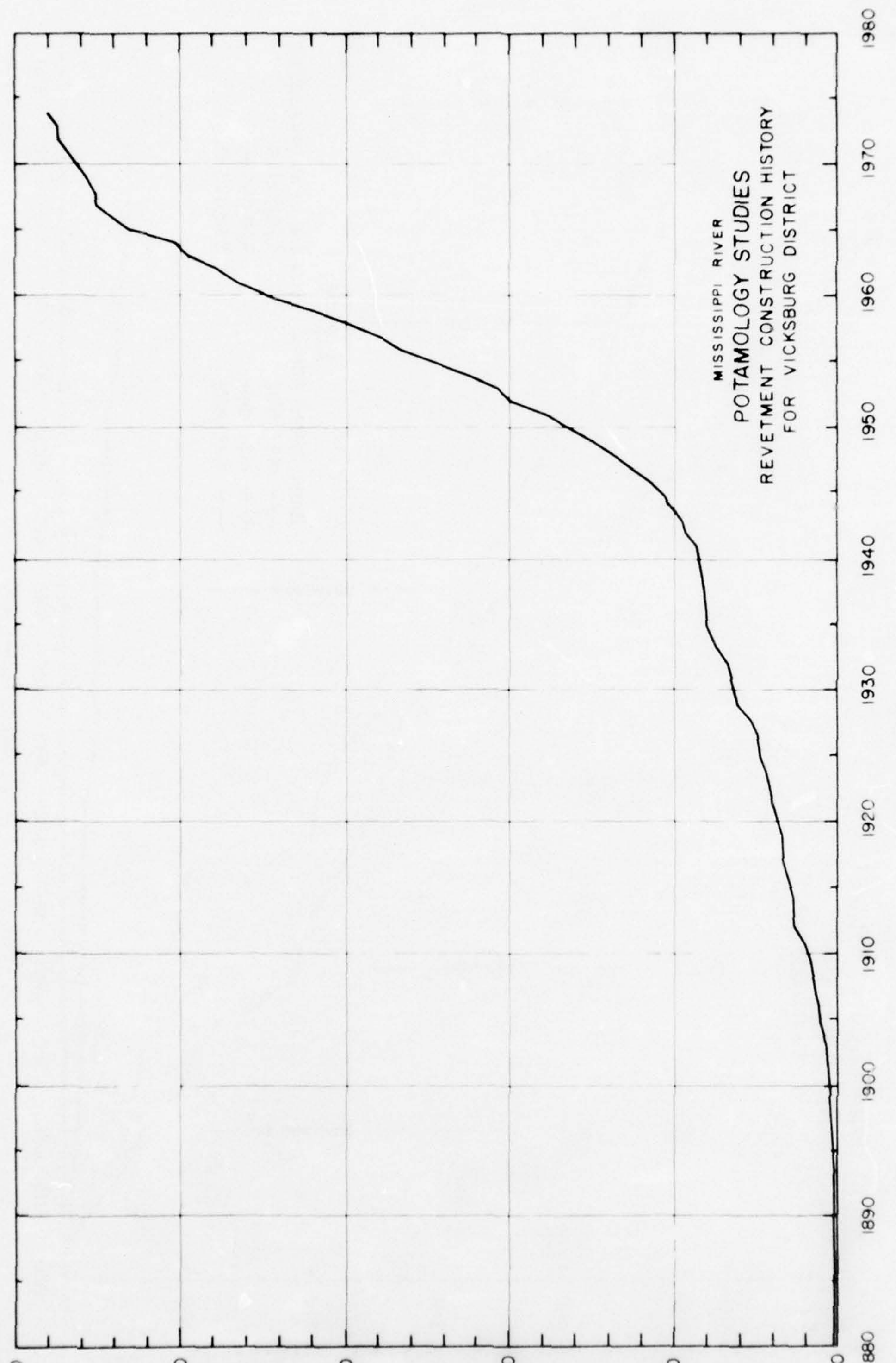

MISSISSIPPI RIVER
POTAMOLOGY STUDIES
REVETMENT CONSTRUCTION HISTORY
FOR VICKSBURG DISTRICT
CUMULATIVE MILES OF REVETMENT CONSTRUCTION
0
50
100
150
200
250
CALENDER YEAR
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980

FIGURE 7

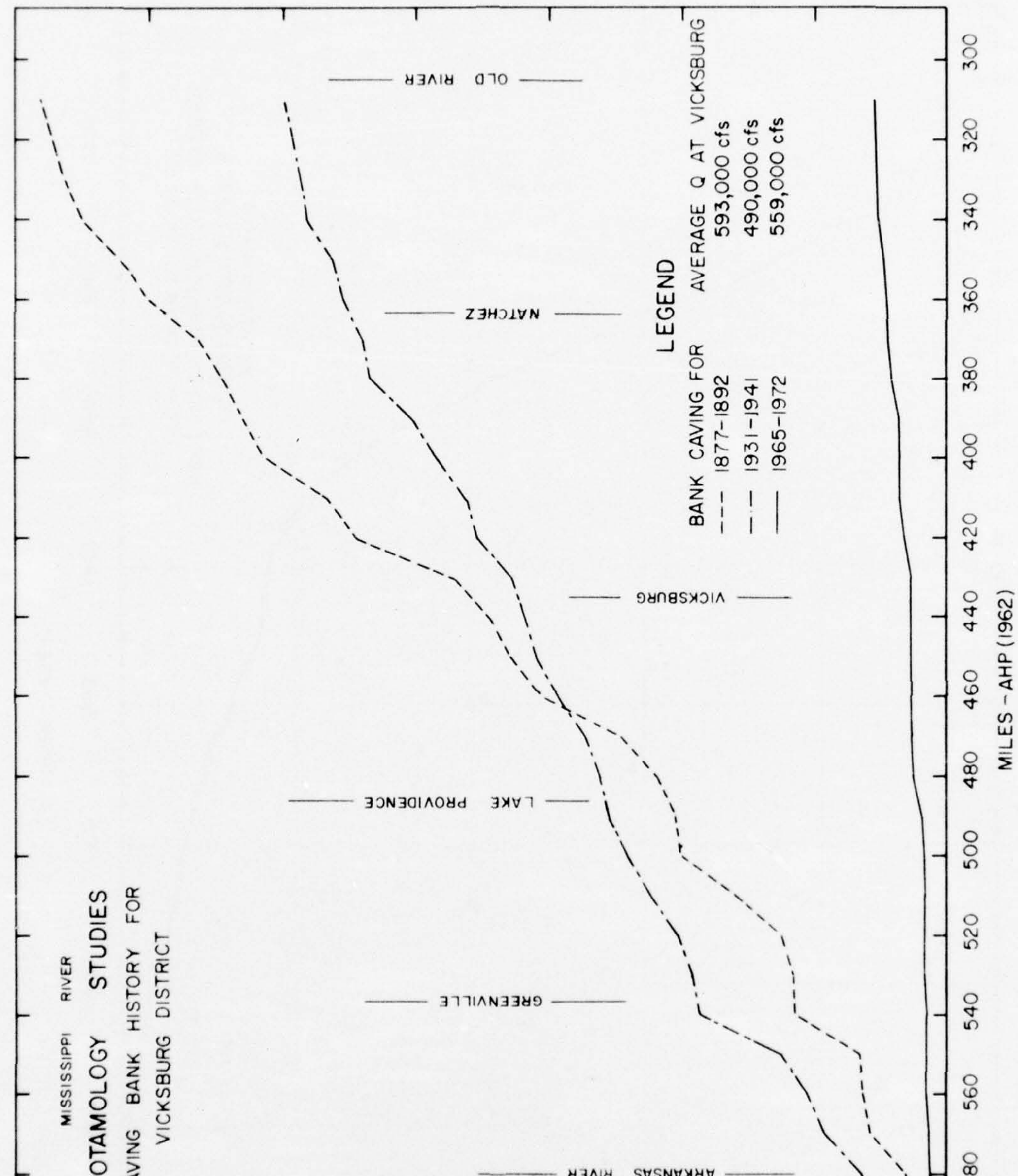
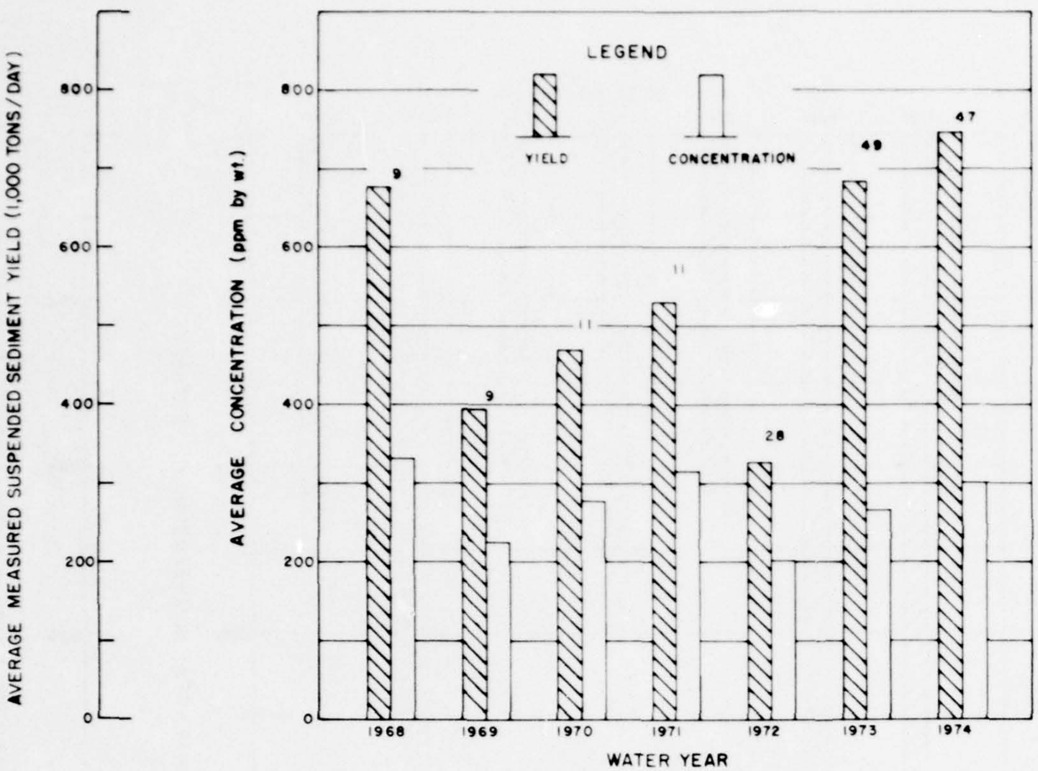

MISSISSIPPI RIVER
POTAMOLOGY STUDIES
CAVING BANK HISTORY FOR
VICKSBURG DISTRICT
LEGEND
BANK CAVING FOR AVERAGE Q AT VICKSBURG
1877-1892 593,000 cfs
1931-1941 490,000 cfs
1965-1972 559,000 cfs
ARKANSAS RIVER
GREENVILLE
LAKE PROVIDENCE
VICKSBURG
NATCHEZ
OLD RIVER
ACCUMULATED AVERAGE ANNUAL BANK CAVING (MILLION cu yds./yr)
MILES - AHP (1962)
0
100
200
300
400
500
600
700
620
600
580
560
540
520
500
480
460
440
420
400
380
360
340
320
300

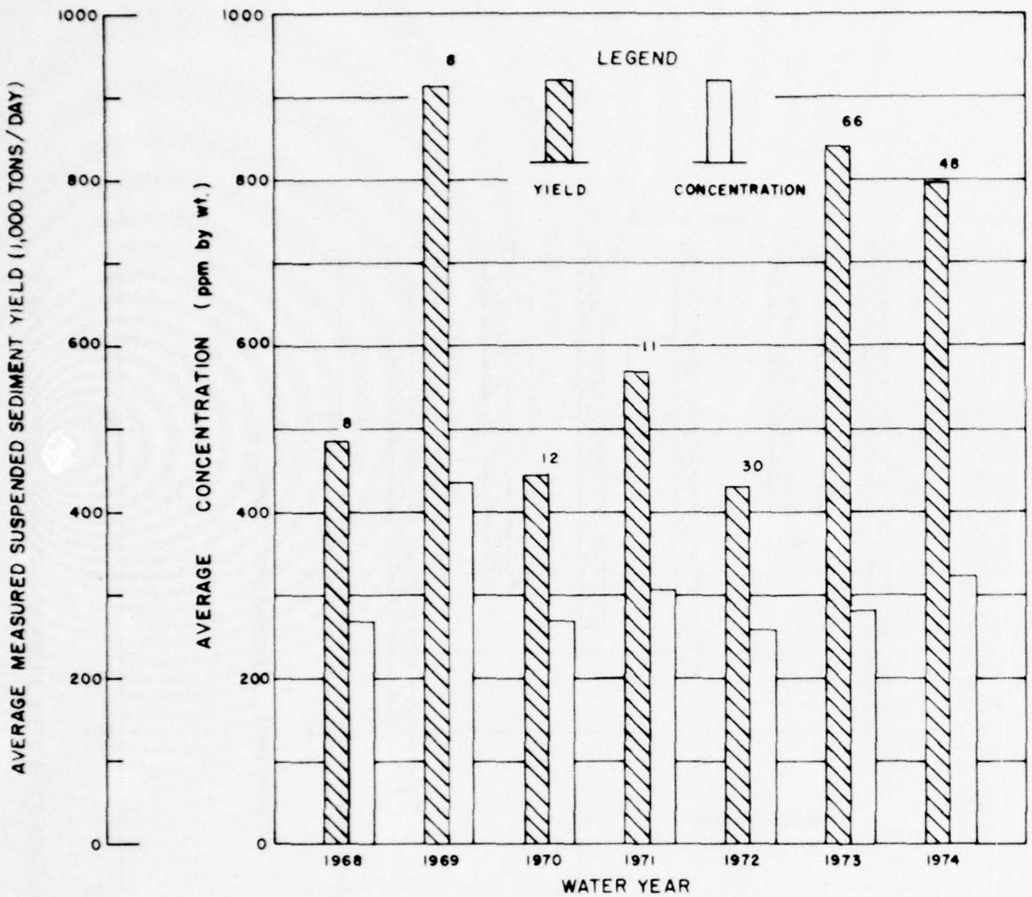
FIGURE 8



NOTE:
NUMBER ABOVE BARS
INDICATE NUMBER OF
MEASUREMENTS MADE

MISSISSIPPI RIVER
POTAMOLOGY STUDIES
AVERAGE MEASURED SUSPENDED SEDIMENT
YIELD AND CONCENTRATION, 1968-1974
ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 AHP

FIGURE 9



NOTE:
NUMBERS ABOVE BARS
INDICATE NUMBER OF
MEASUREMENTS MADE

MISSISSIPPI RIVER

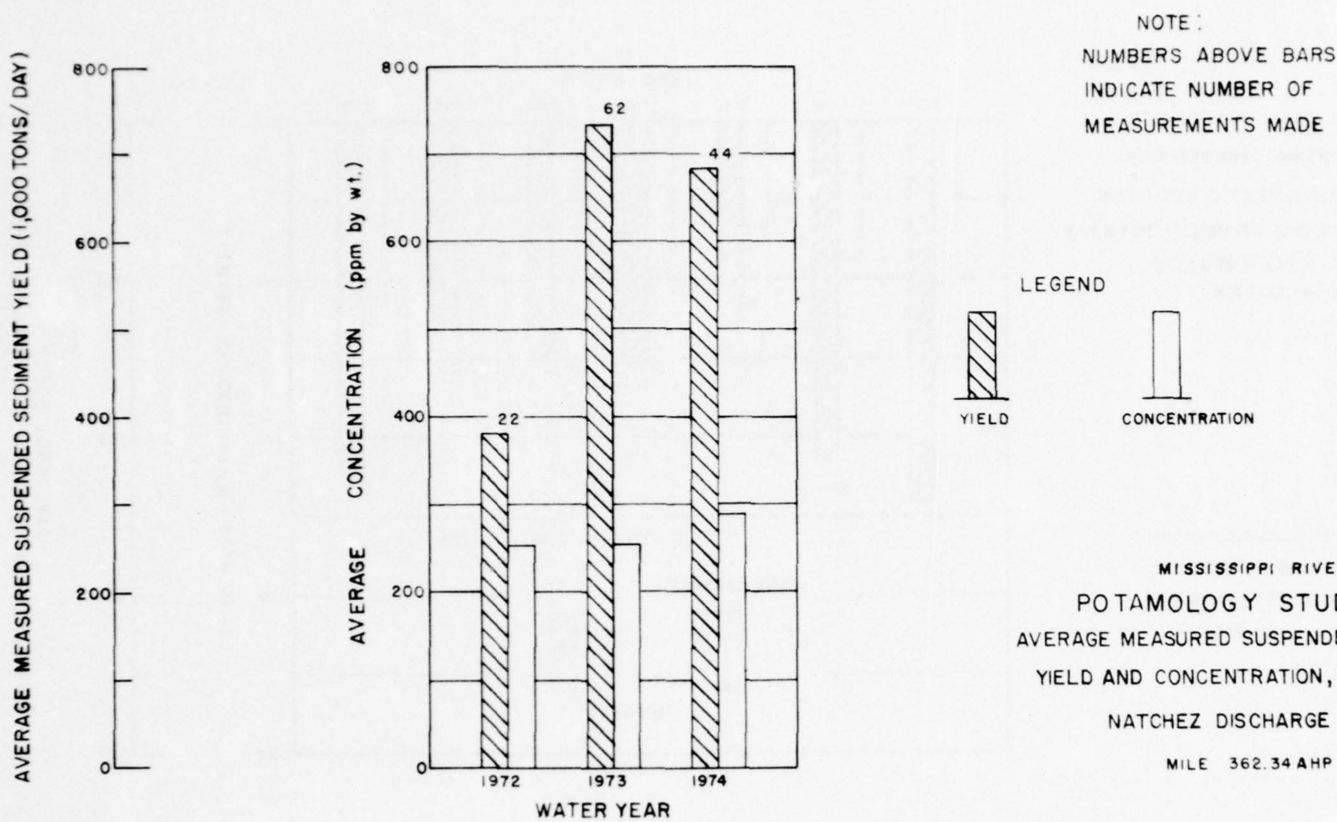
POTAMOLOGY STUDIES

AVERAGE MEASURED SUSPENDED SEDIMENT
YIELD AND CONCENTRATION, 1968-1974

VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

FIGURE 10



MISSISSIPPI RIVER

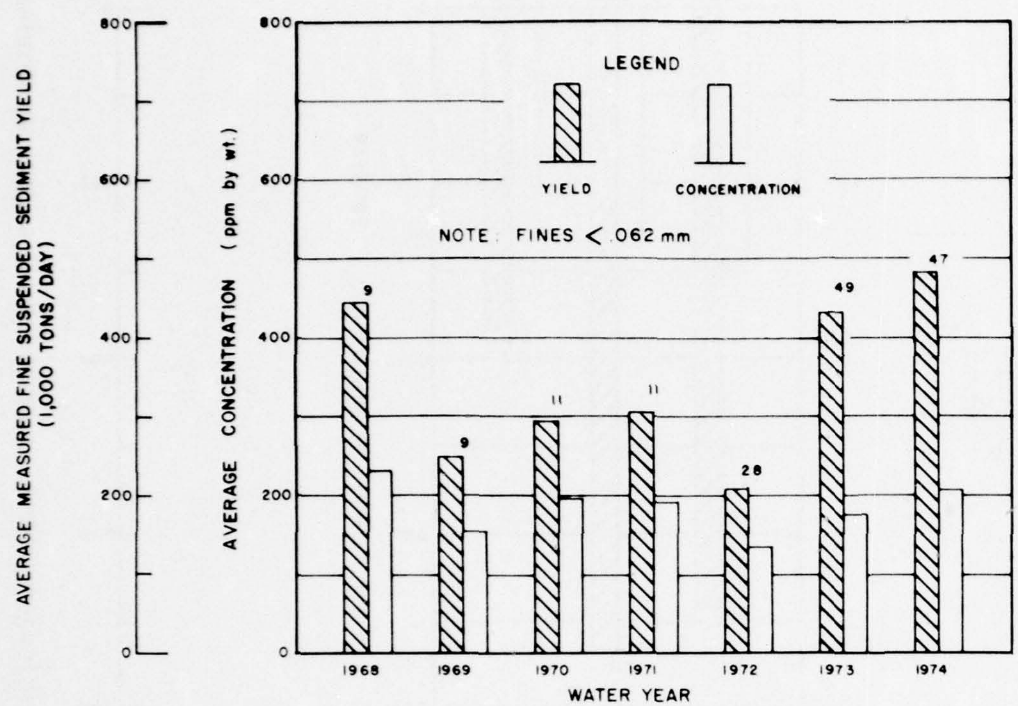
POTAMOLOGY STUDIES

AVERAGE MEASURED SUSPENDED SEDIMENT
YIELD AND CONCENTRATION, 1972-1974

NATCHEZ DISCHARGE RANGE

MILE 362.34 AHP

FIGURE 11



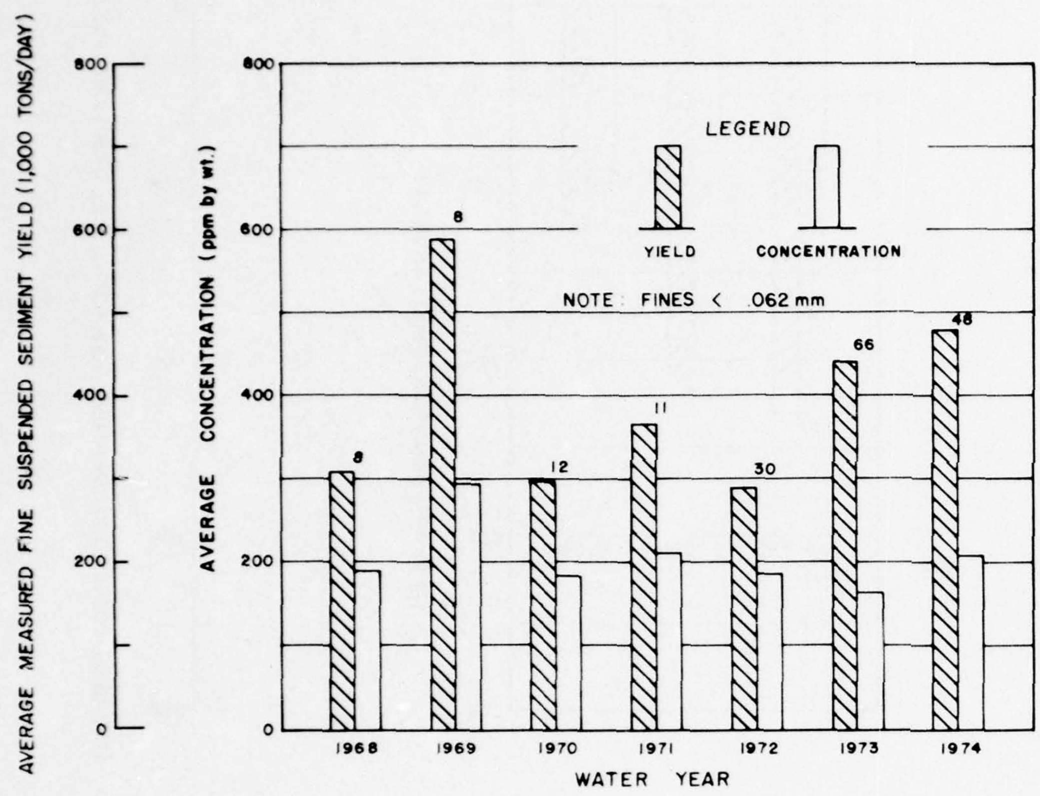
NOTE:
NUMBERS ABOVE BARS
INDICATE NUMBER OF
MEASUREMENTS MADE

MISSISSIPPI RIVER

POTAMOLOGY STUDIES

AVERAGE MEASURED FINE SUSPENDED SEDIMENT
YIELD AND CONCENTRATION, 1968-1974
ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 AHP

FIGURE 12



NOTE:
NUMBERS ABOVE BARS
INDICATE NUMBER OF
MEASUREMENTS MADE

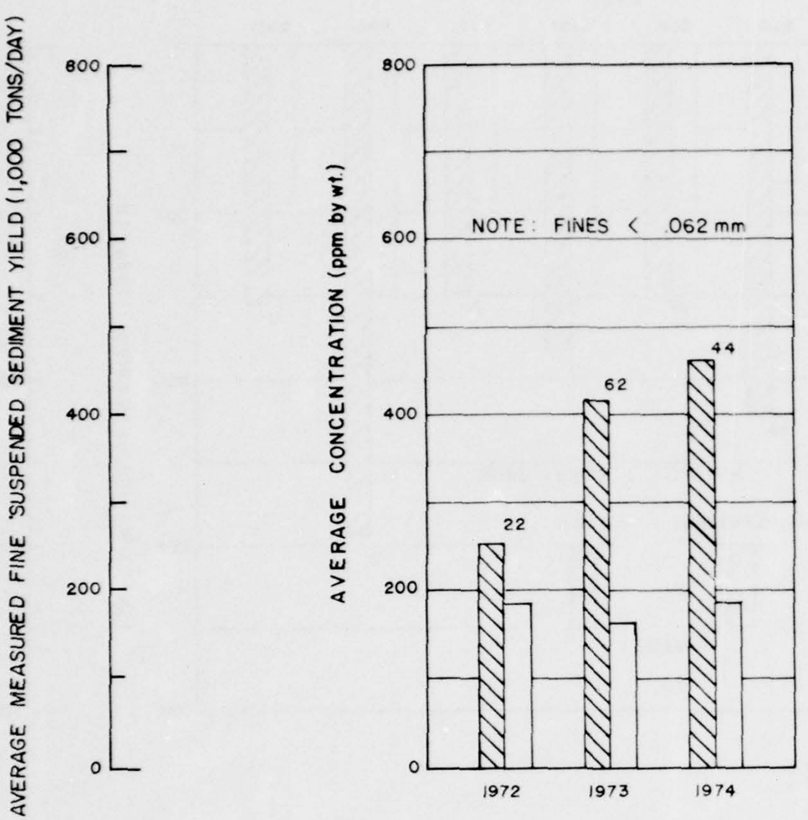
MISSISSIPPI RIVER

POTAMOLOGY STUDIES

AVERAGE MEASURED FINE SUSPENDED SEDIMENT
YIELD AND CONCENTRATION, 1968-1974
VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

FIGURE 13



NOTE:
NUMBERS ABOVE BARS
INDICATE NUMBER OF
MEASUREMENTS MADE

LEGEND

YIELD CONCENTRATION

MISSISSIPPI RIVER

POTAMOLOGY STUDIES

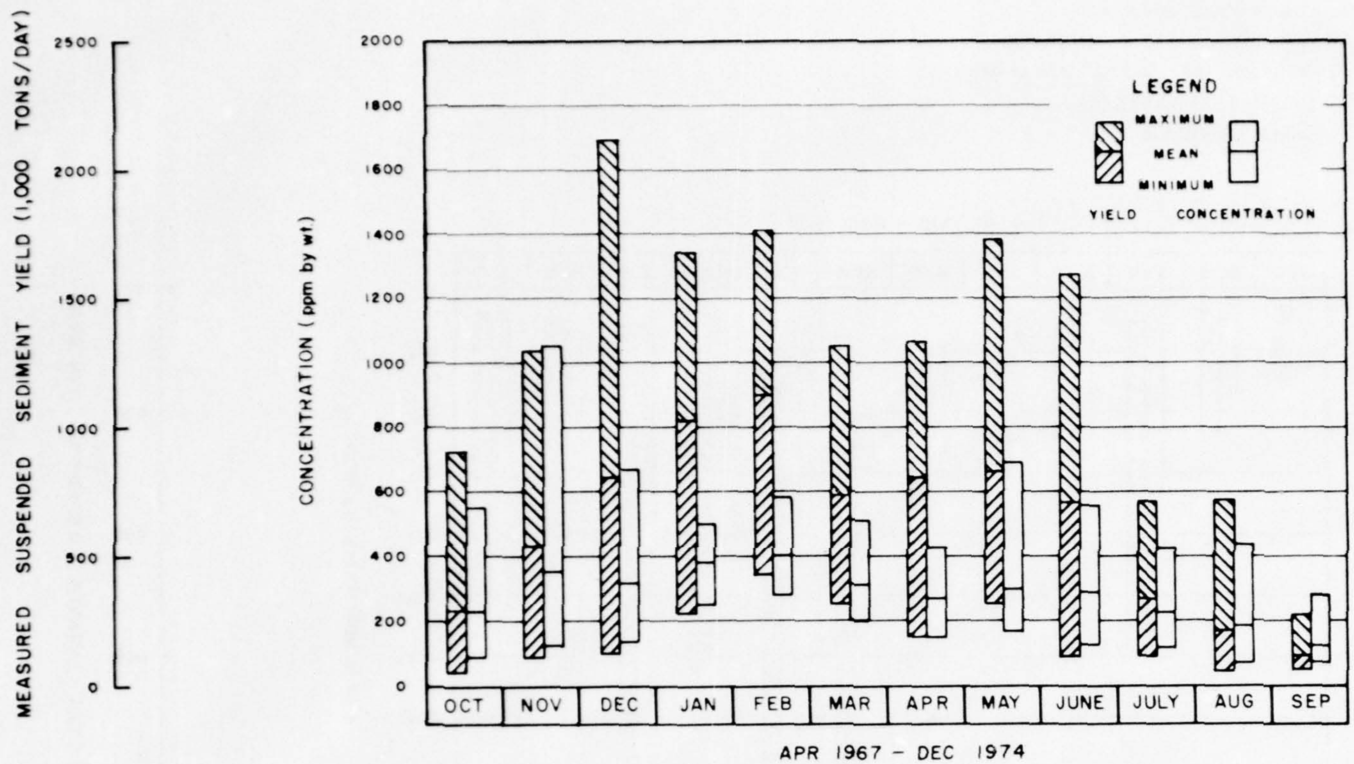
AVERAGE MEASURED FINE SUSPENDED SEDIMENT

YIELD AND CONCENTRATION, 1972-1974

NATCHEZ DISCHARGE RANGE

MILE 362.34 AHP

FIGURE 14



MISSISSIPPI RIVER

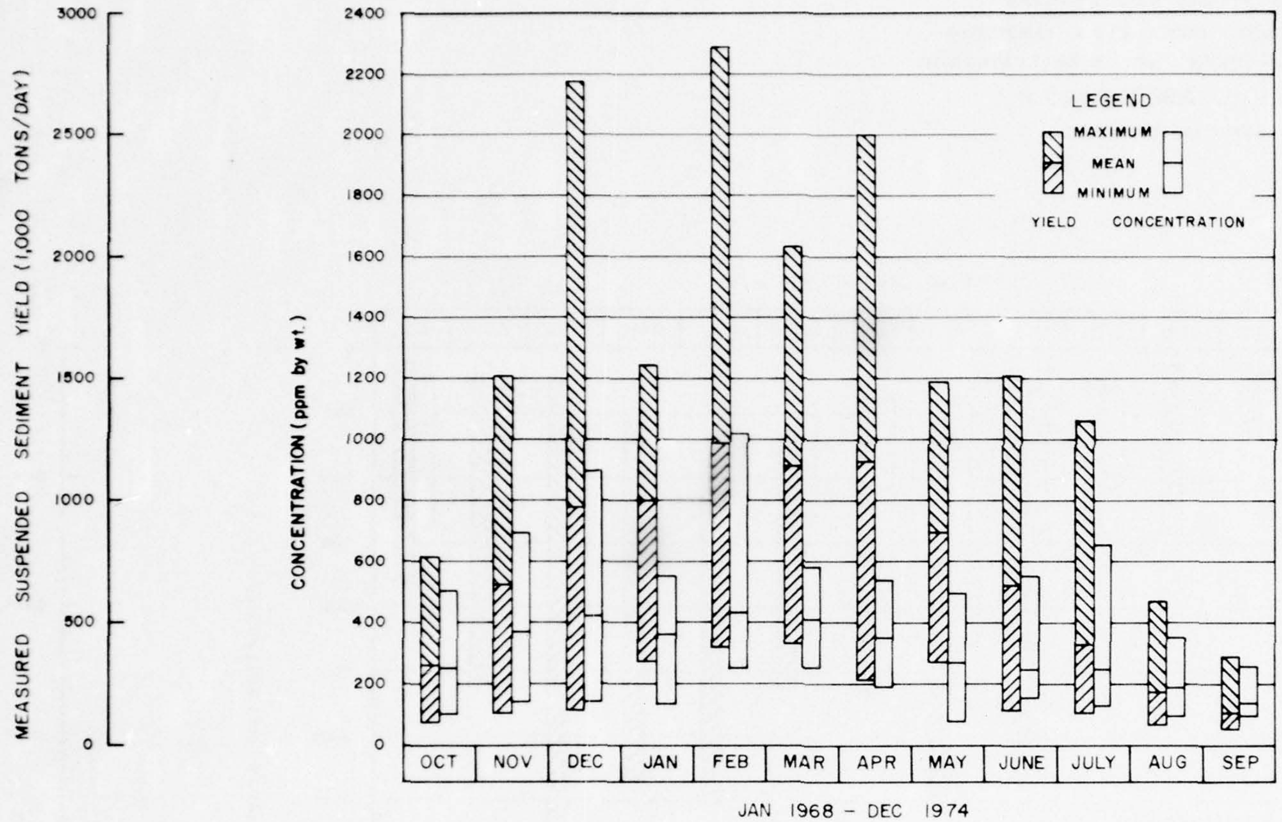
POTAMOLOGY STUDIES

MONTHLY TREND OF MEASURED SUSPENDED SEDIMENT YIELD AND CONCENTRATIONS

ARKANSAS CITY DISCHARGE RANGE

MILE 565.9 AHP

FIGURE 15



MISSISSIPPI RIVER

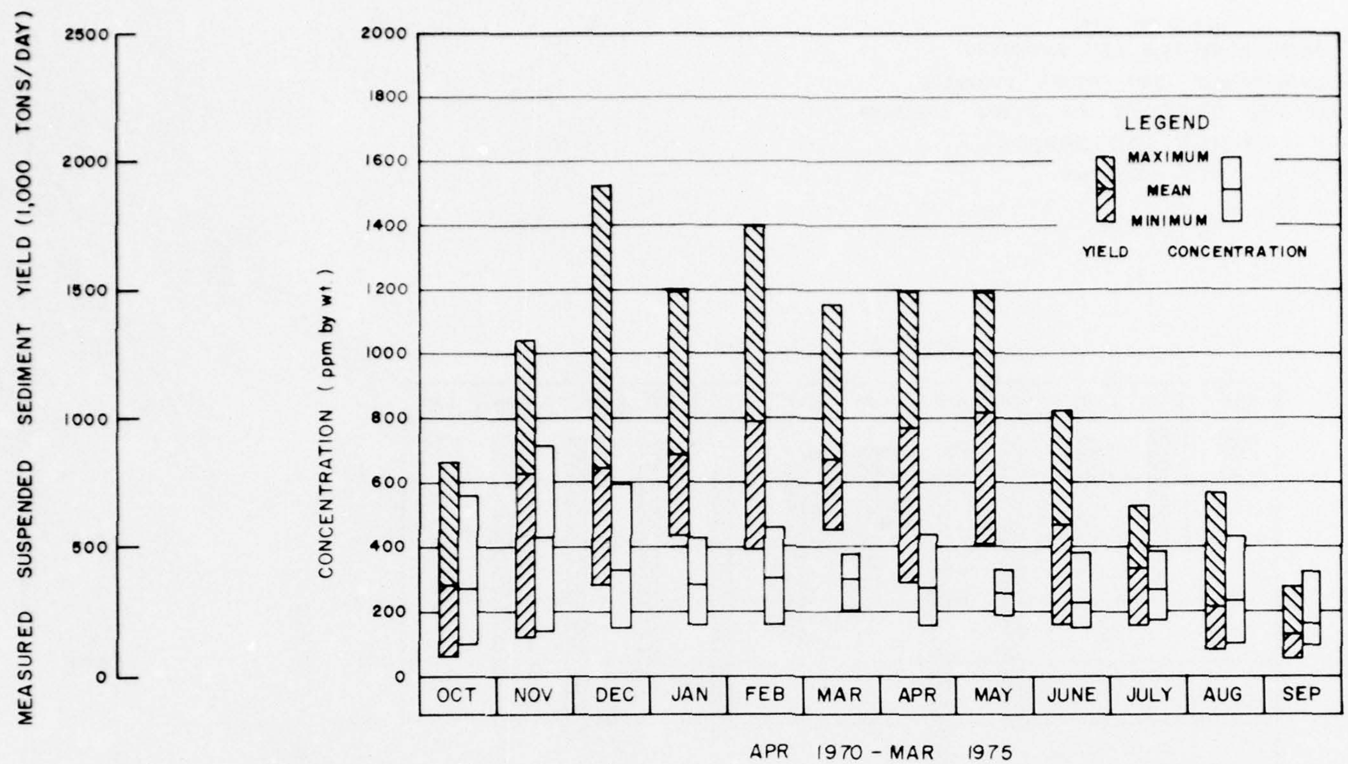
POTAMOLOGY STUDIES

MONTHLY TREND OF MEASURED SUSPENDED SEDIMENT YIELD AND CONCENTRATIONS

VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

FIGURE 16



MISSISSIPPI RIVER

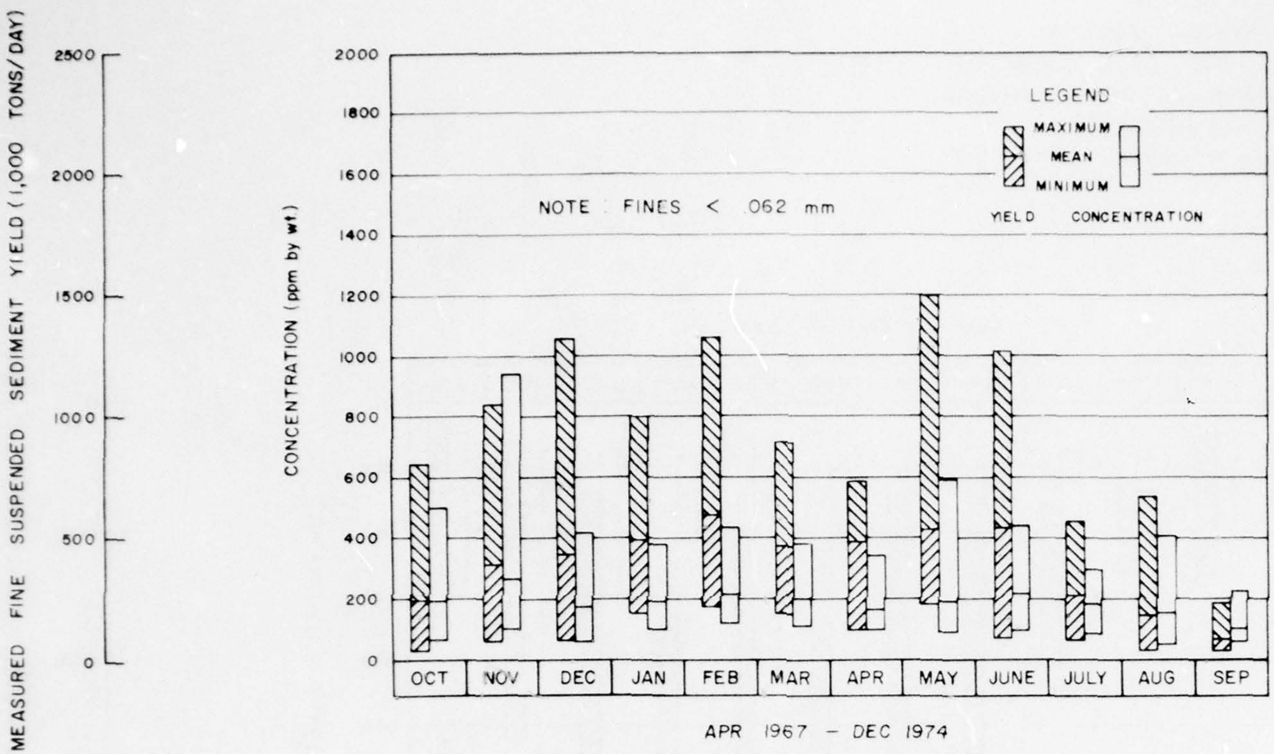
POTAMOLOGY STUDIES

MONTHLY TREND OF MEASURED SUSPENDED SEDIMENT YIELD AND CONCENTRATIONS

NATCHEZ DISCHARGE RANGE

MILE 362 34 AHP

FIGURE 17



MISSISSIPPI RIVER

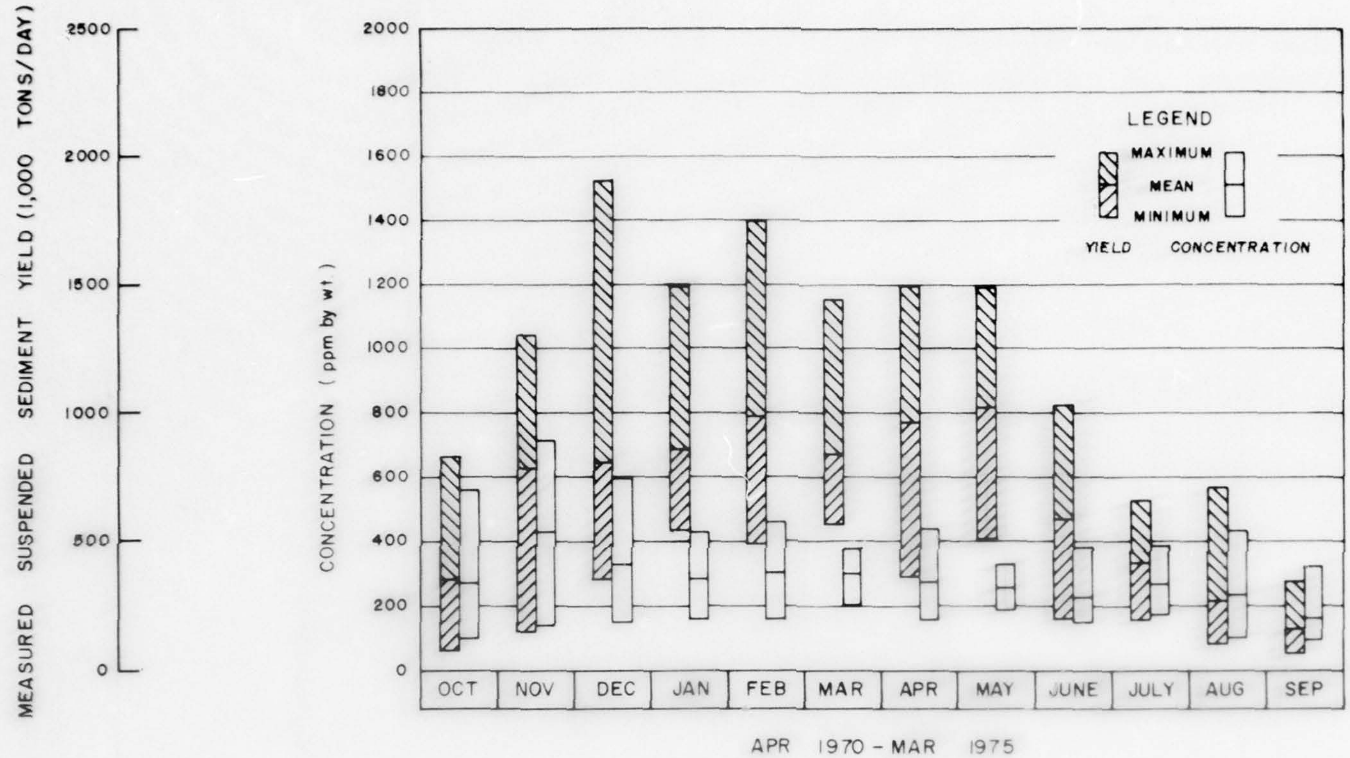
POTAMOLOGY STUDIES

MONTHLY TREND OF MEASURED FINE SUSPENDED SEDIMENT YIELD AND CONCENTRATIONS

ARKANSAS CITY DISCHARGE RANGE

MILE 565.9 AHP

FIGURE 18



MISSISSIPPI RIVER

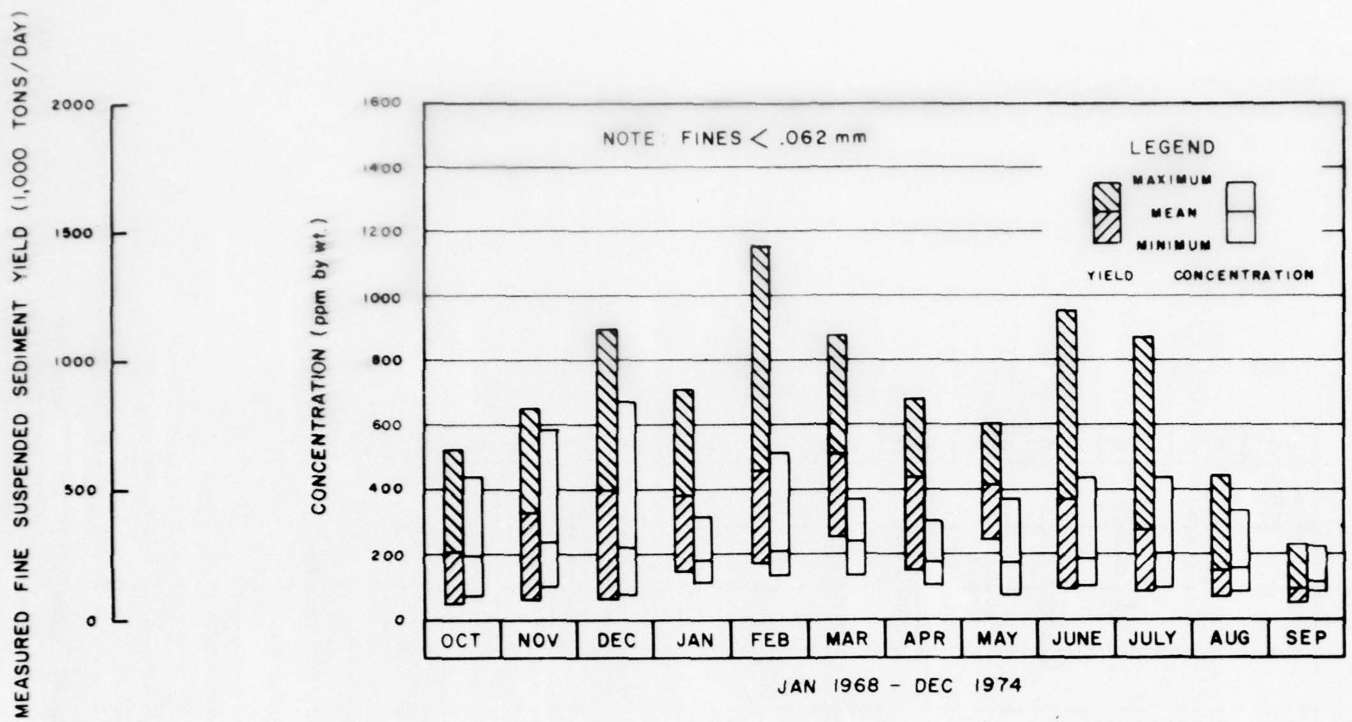
POTAMOLOGY STUDIES

MONTHLY TREND OF MEASURED SUSPENDED SEDIMENT YIELD AND CONCENTRATIONS

NATCHEZ DISCHARGE RANGE

MILE 362 34 AHP

FIGURE 17



MISSISSIPPI RIVER

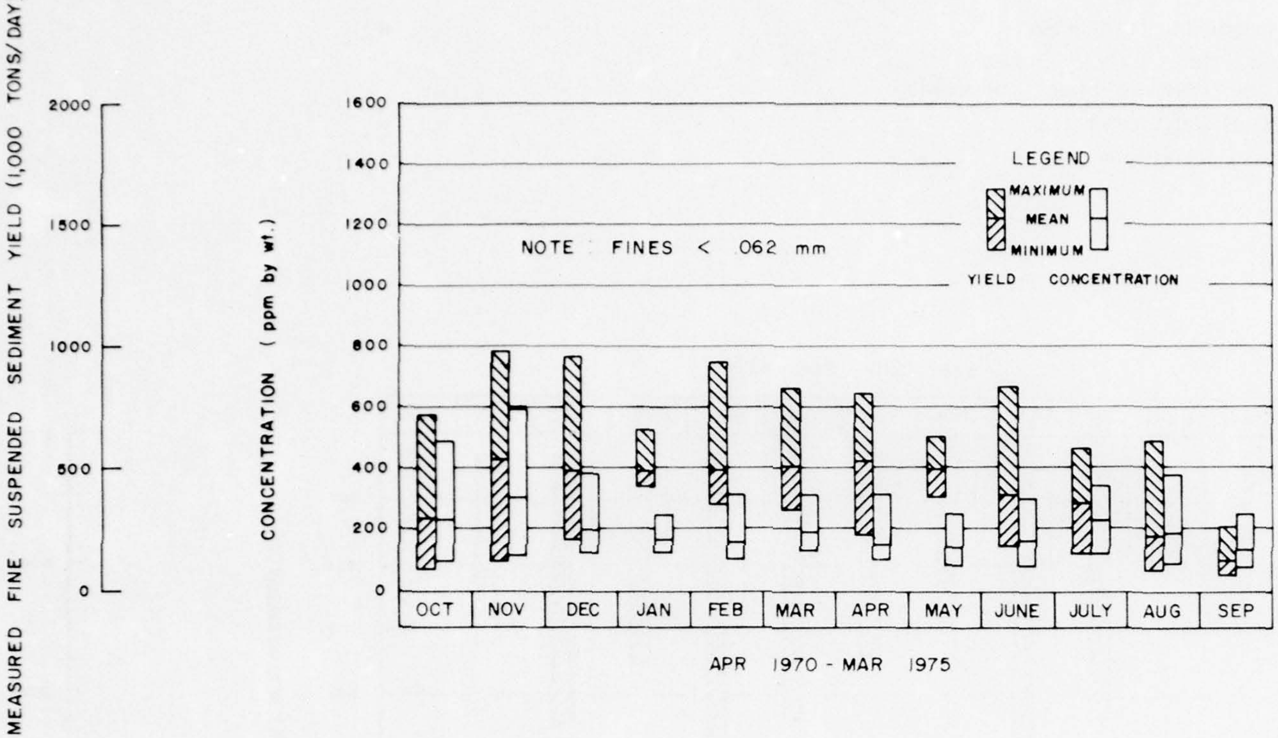
POTAMOLOGY STUDIES

MONTHLY TREND OF MEASURED FINE SUSPENDED SEDIMENT YIELD AND CONCENTRATIONS

VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

FIGURE 19



MISSISSIPPI RIVER

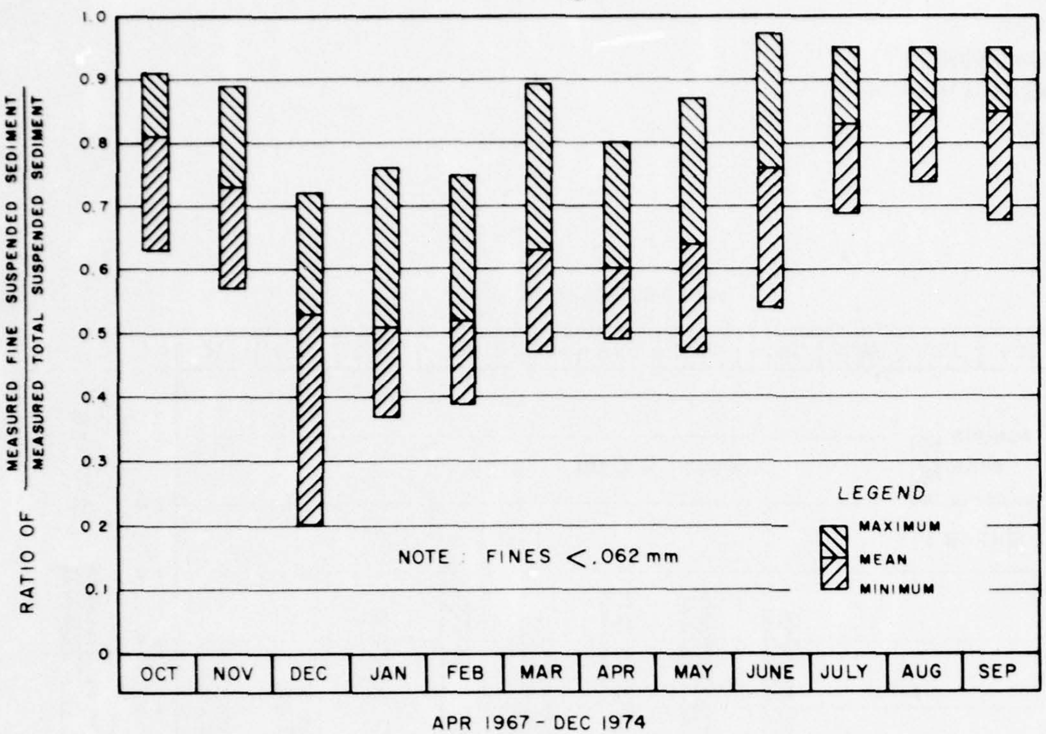
POTAMOLOGY STUDIES

MONTHLY TREND OF MEASURED FINE SUSPENDED SEDIMENT YIELD AND CONCENTRATIONS

NATCHEZ DISCHARGE RANGE

MILE 362.34 AHP

FIGURE 20

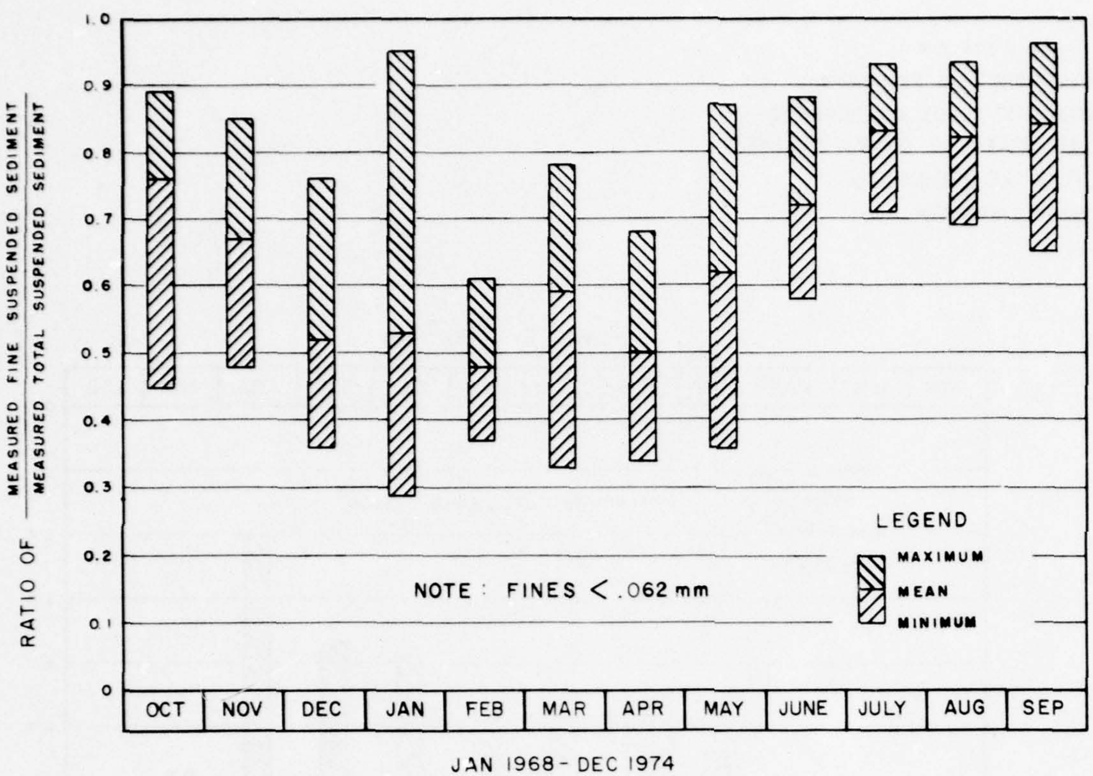


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

MONTHLY TREND OF RATIO OF MEASURED FINE
TO MEASURED TOTAL SUSPENDED SEDIMENT
ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 AHP

FIGURE 21



MISSISSIPPI RIVER

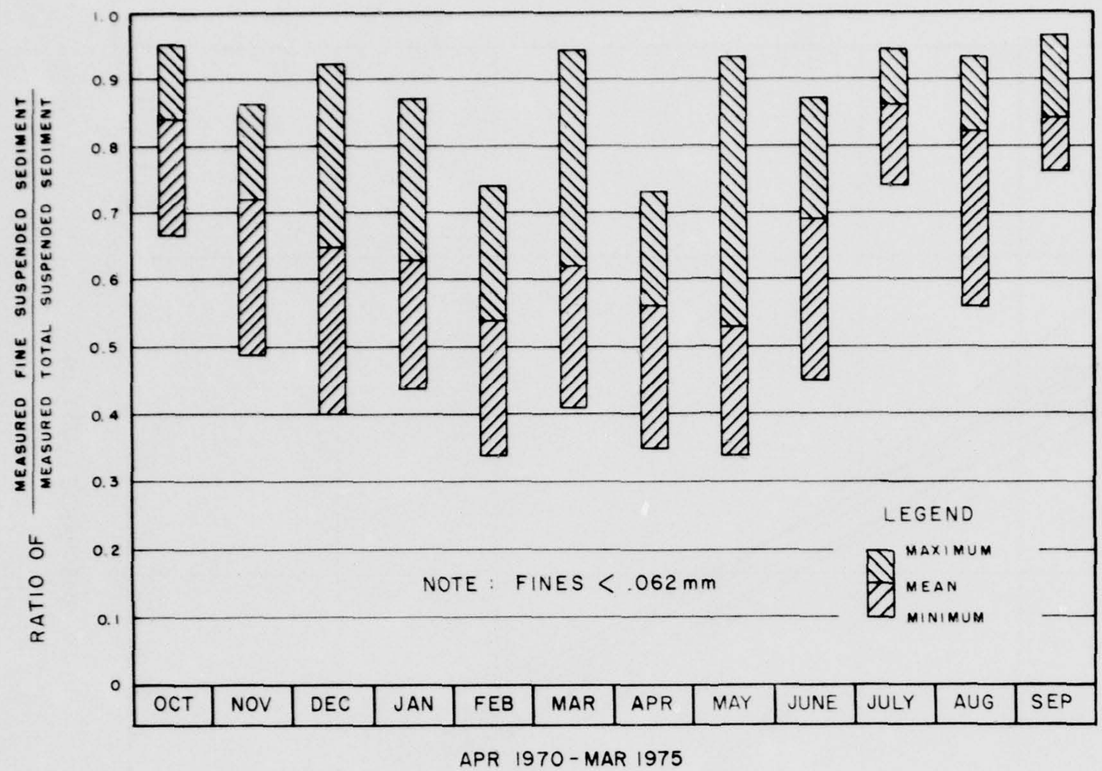
POTAMOLOGY STUDIES

MONTHLY TREND OF RATIO OF MEASURED FINE TO MEASURED TOTAL SUSPENDED SEDIMENT

VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

FIGURE 22



MISSISSIPPI RIVER

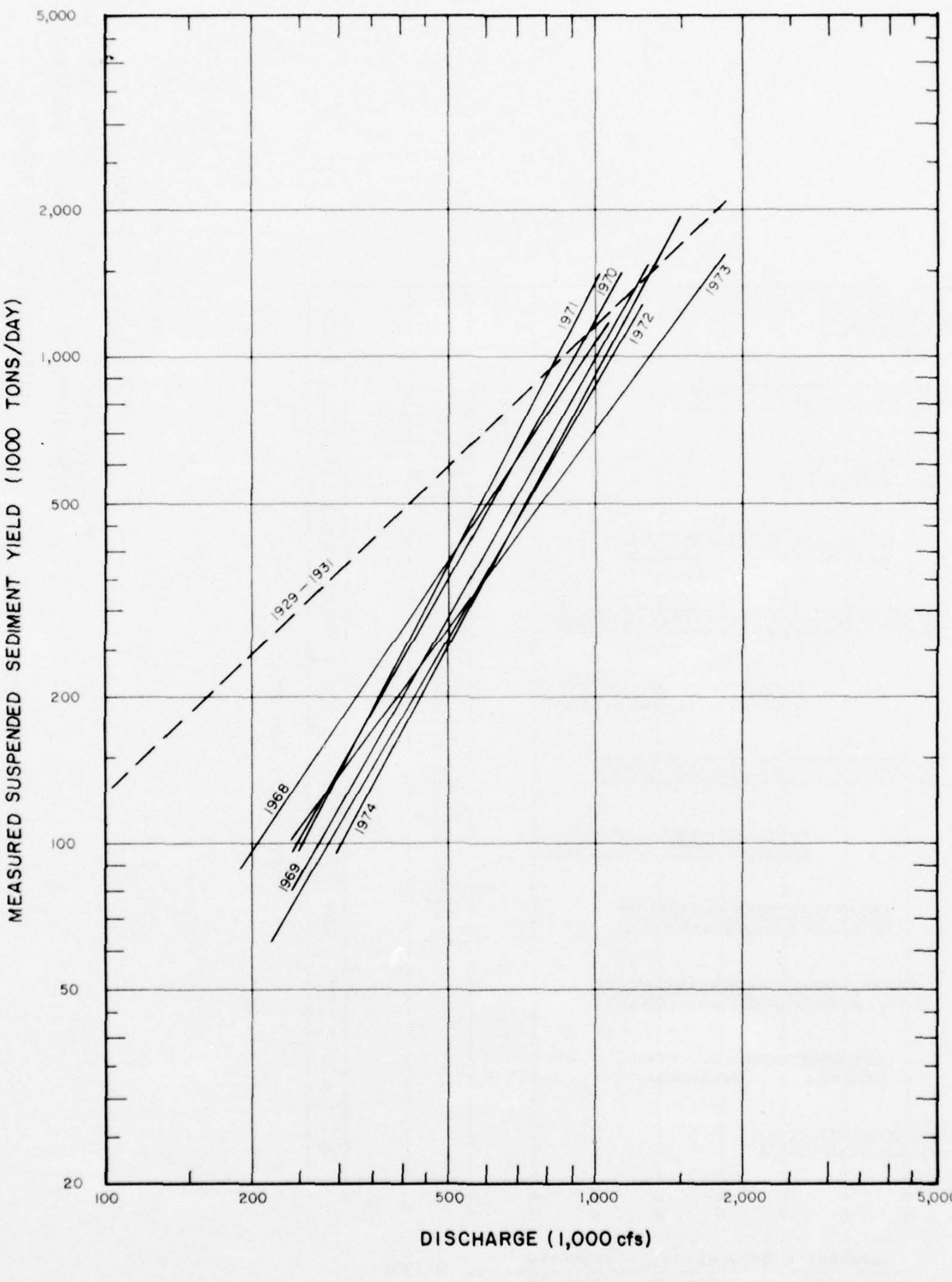
POTAMOLOGY STUDIES

MONTHLY TREND OF RATIO OF MEASURED FINE TO MEASURED TOTAL SUSPENDED SEDIMENT

NATCHEZ DISCHARGE RANGE

MILE 362.34 AHP

FIGURE 23



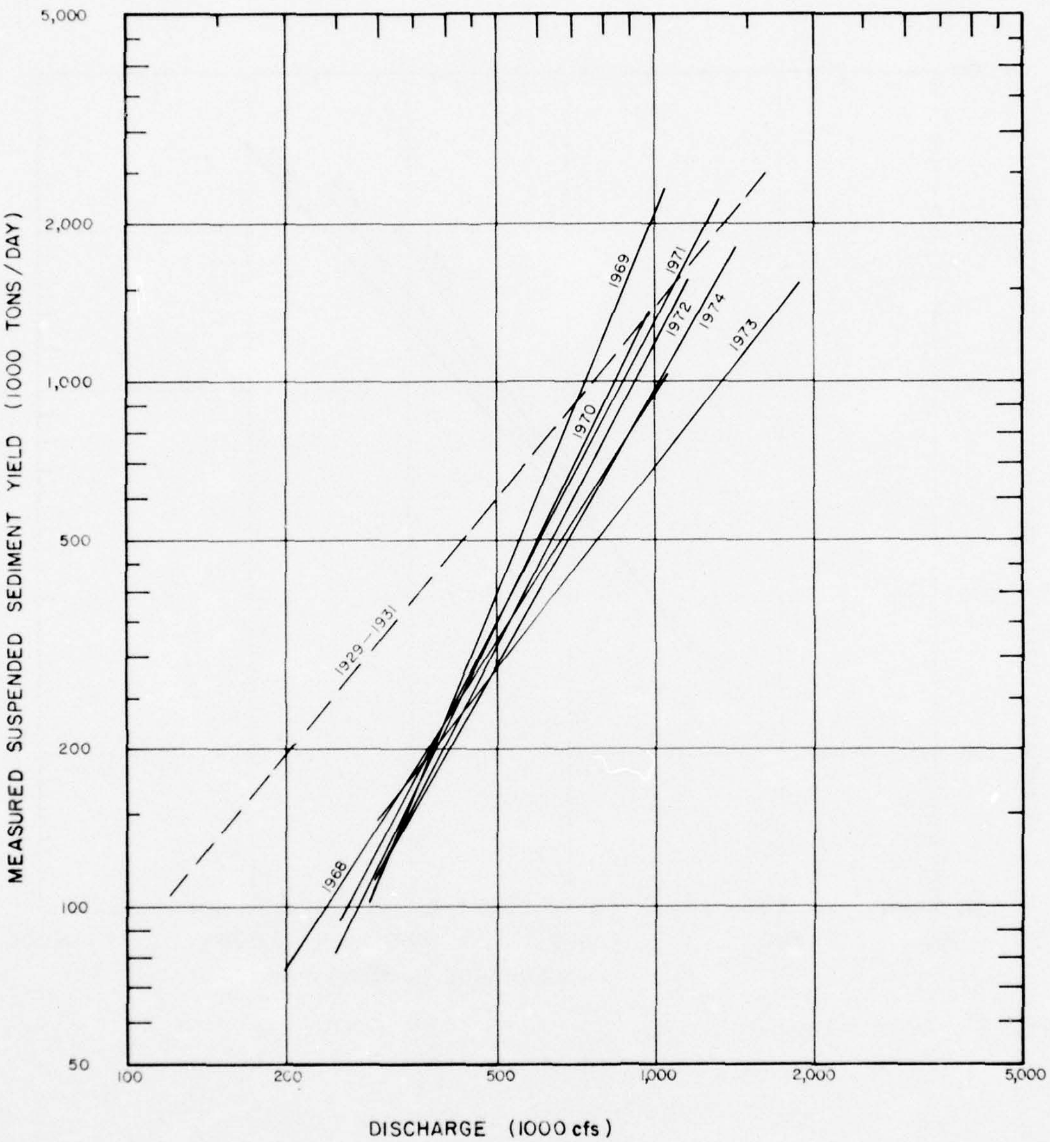
MISSISSIPPI RIVER

POTAMOLOGY STUDIES

MEASURED SUSPENDED SEDIMENT YIELD
VS DISCHARGE BY WATER YEAR
ARKANSAS CITY DISCHARGE RANGE

MILE 565.9 AHP

FIGURE 24



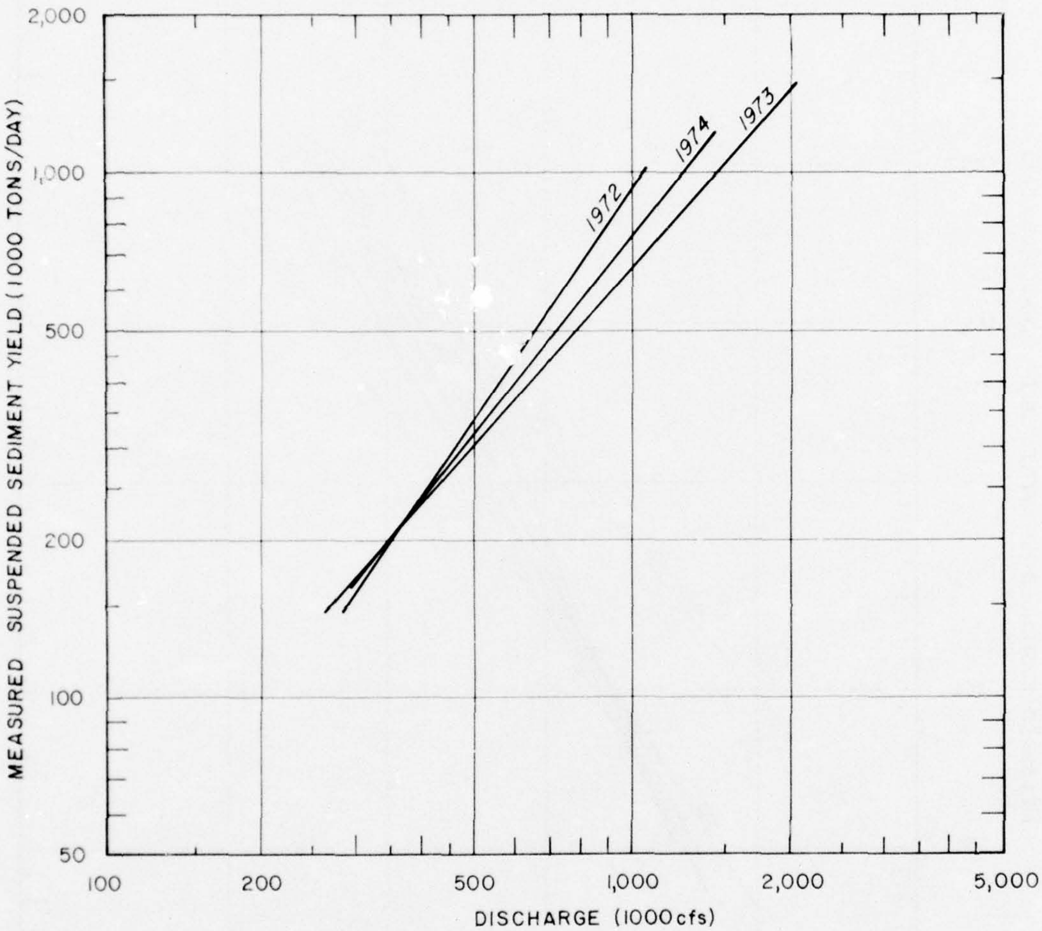
MISSISSIPPI RIVER

POTAMOLOGY STUDIES

MEASURED SUSPENDED SEDIMENT YIELD
VS DISCHARGE BY WATER YEAR
VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

FIGURE 25

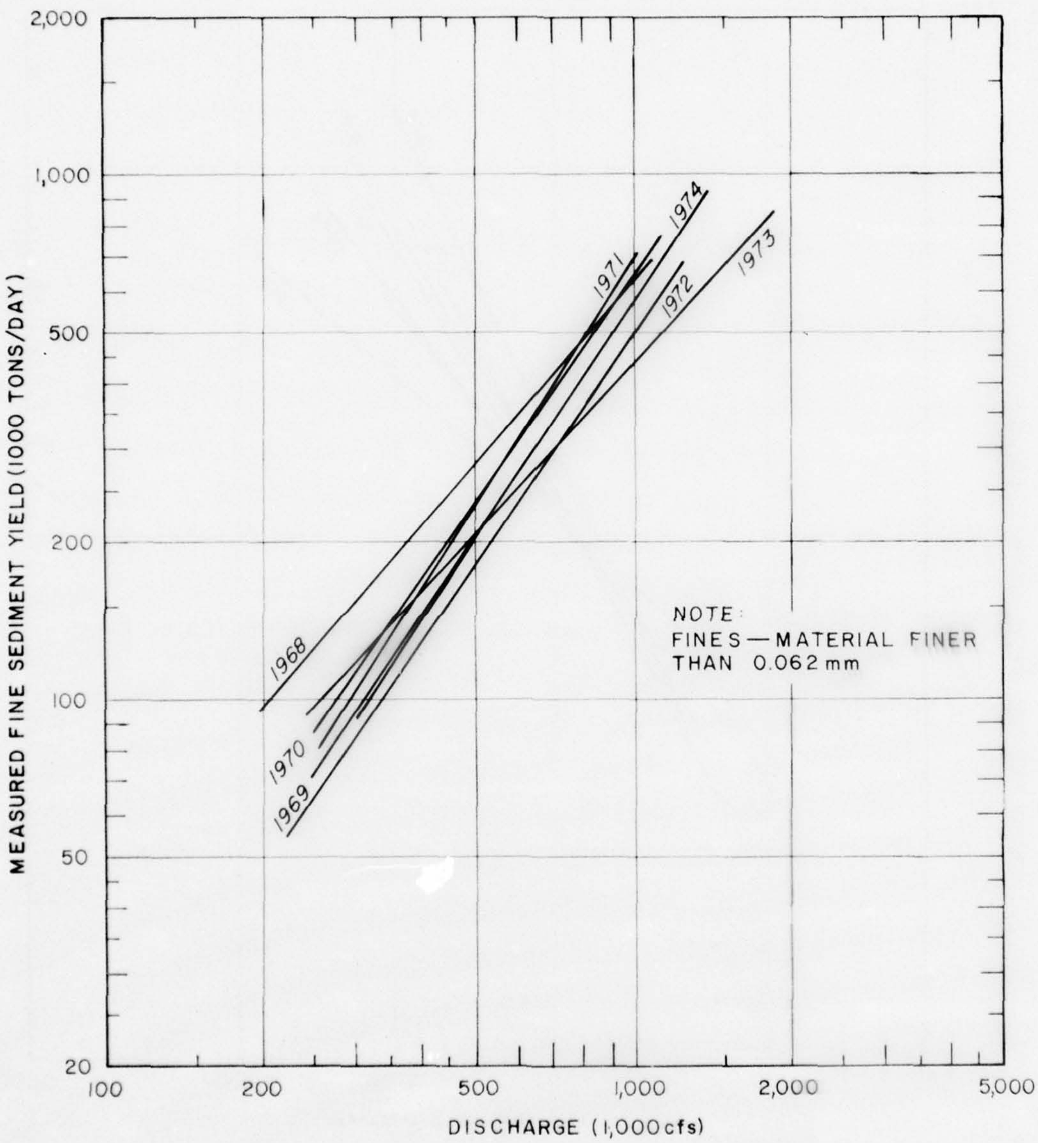


MISSISSIPPI RIVER

POTAMOLOGY STUDIES
MEASURED SUSPENDED SEDIMENT YIELD
VS DISCHARGE BY WATER YEAR
NATCHEZ DISCHARGE RANGE

MILE 362.34 AHP

FIGURE 26



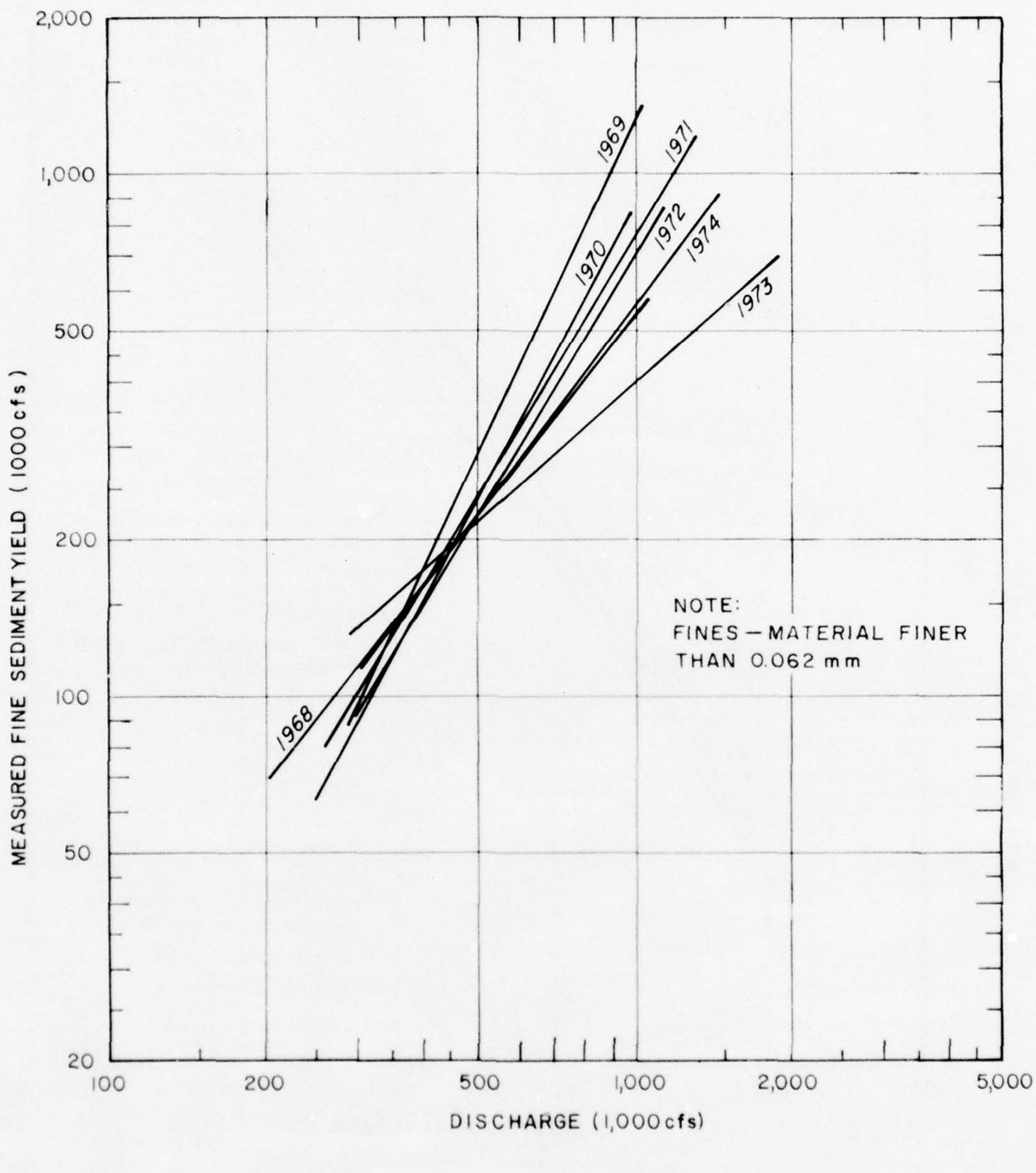
MISSISSIPPI RIVER

POTAMOLOGY STUDIES

MEASURED FINE SEDIMENT YIELD
VS DISCHARGE BY WATER YEAR
ARKANSAS CITY DISCHARGE RANGE

MILE 565.9 AHP

FIGURE 27

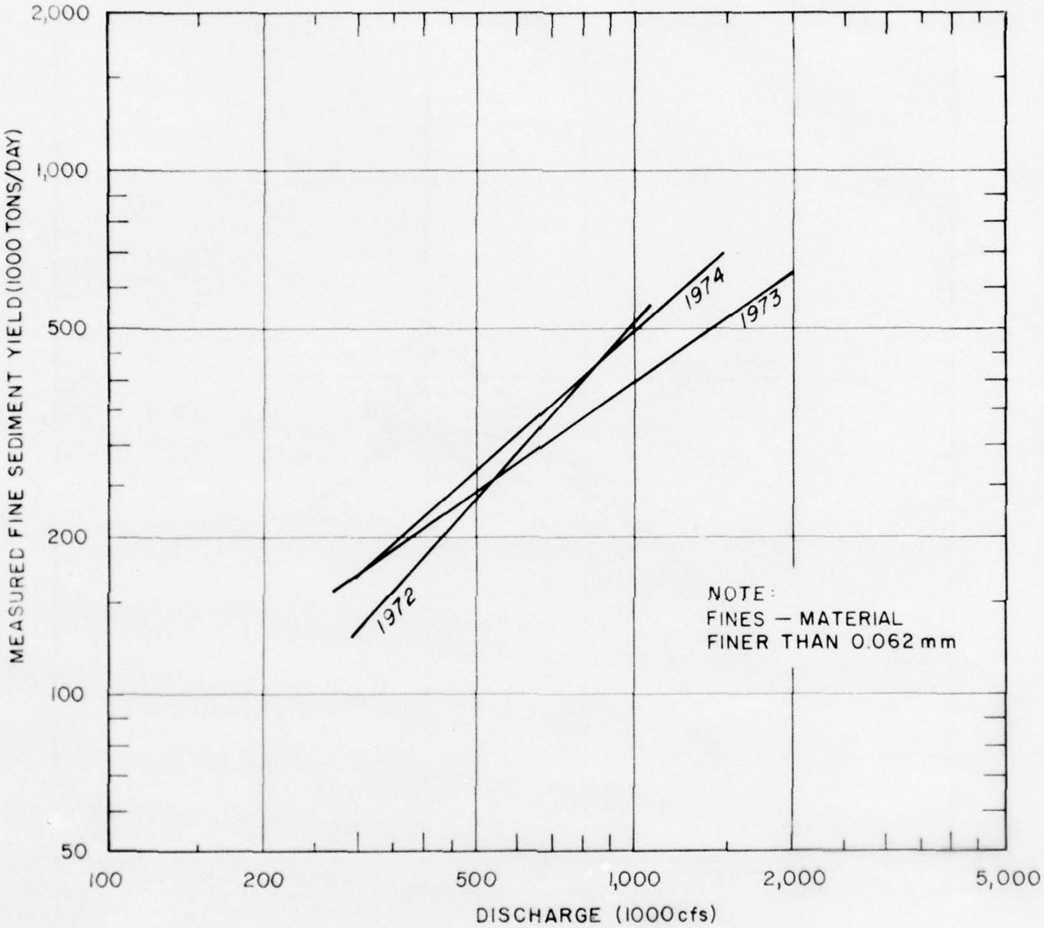


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

MEASURED FINE SEDIMENT YIELD
VS DISCHARGE BY WATER YEAR
VICKSBURG DISCHARGE RANGE
MILE 435.41 AHP

FIGURE 28

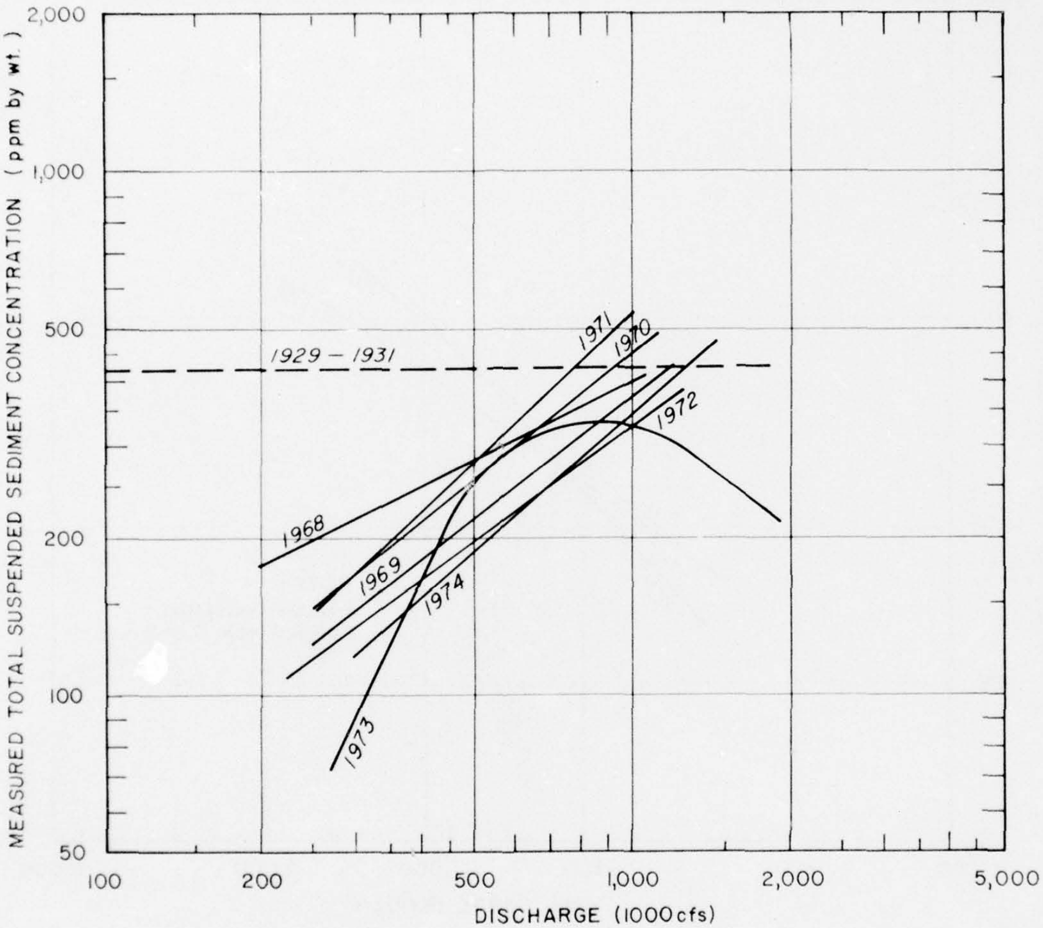


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

MEASURED FINE SEDIMENT YIELD
VS DISCHARGE BY WATER YEAR
NATCHEZ DISCHARGE RANGE
MILE 362.34 AHP

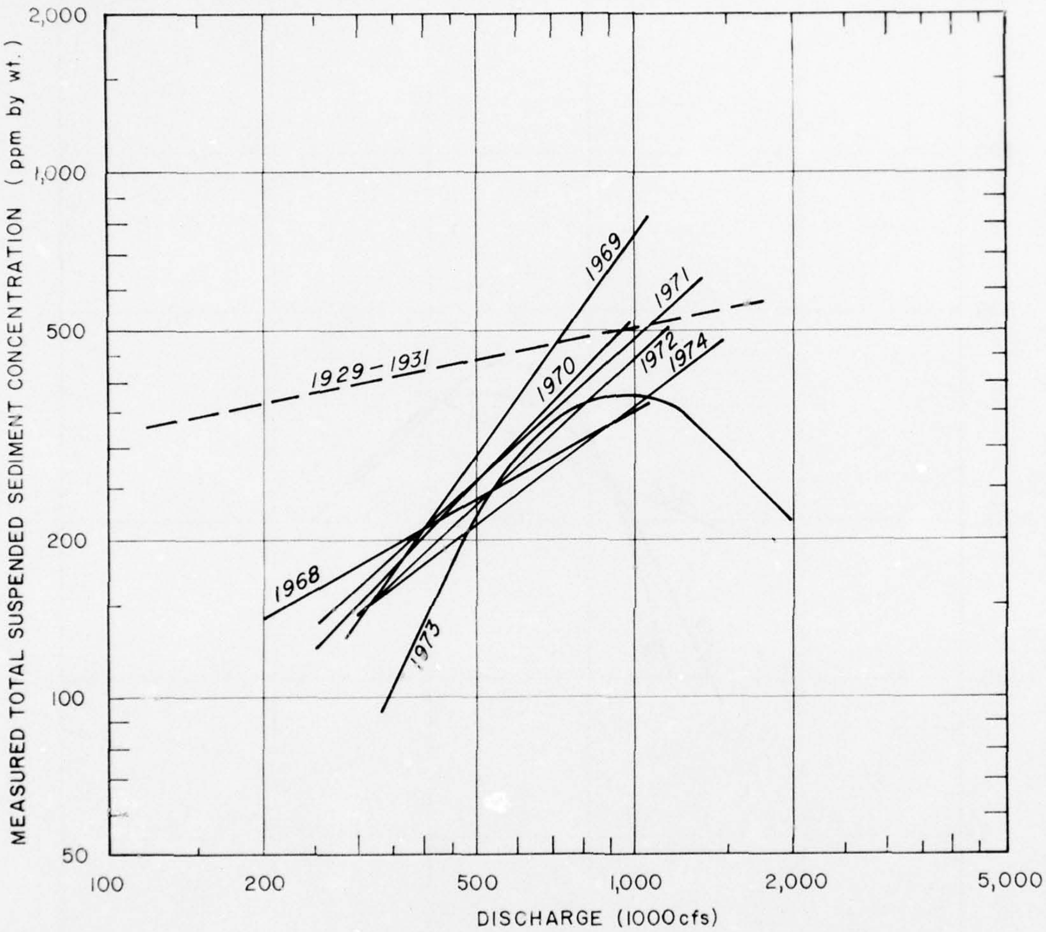
FIGURE 29



MISSISSIPPI RIVER

POTAMOLOGY STUDIES
MEASURED TOTAL SUSPENDED SEDIMENT CONCENTRATION
VS DISCHARGE BY WATER YEAR
ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 AHP

FIGURE 30



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

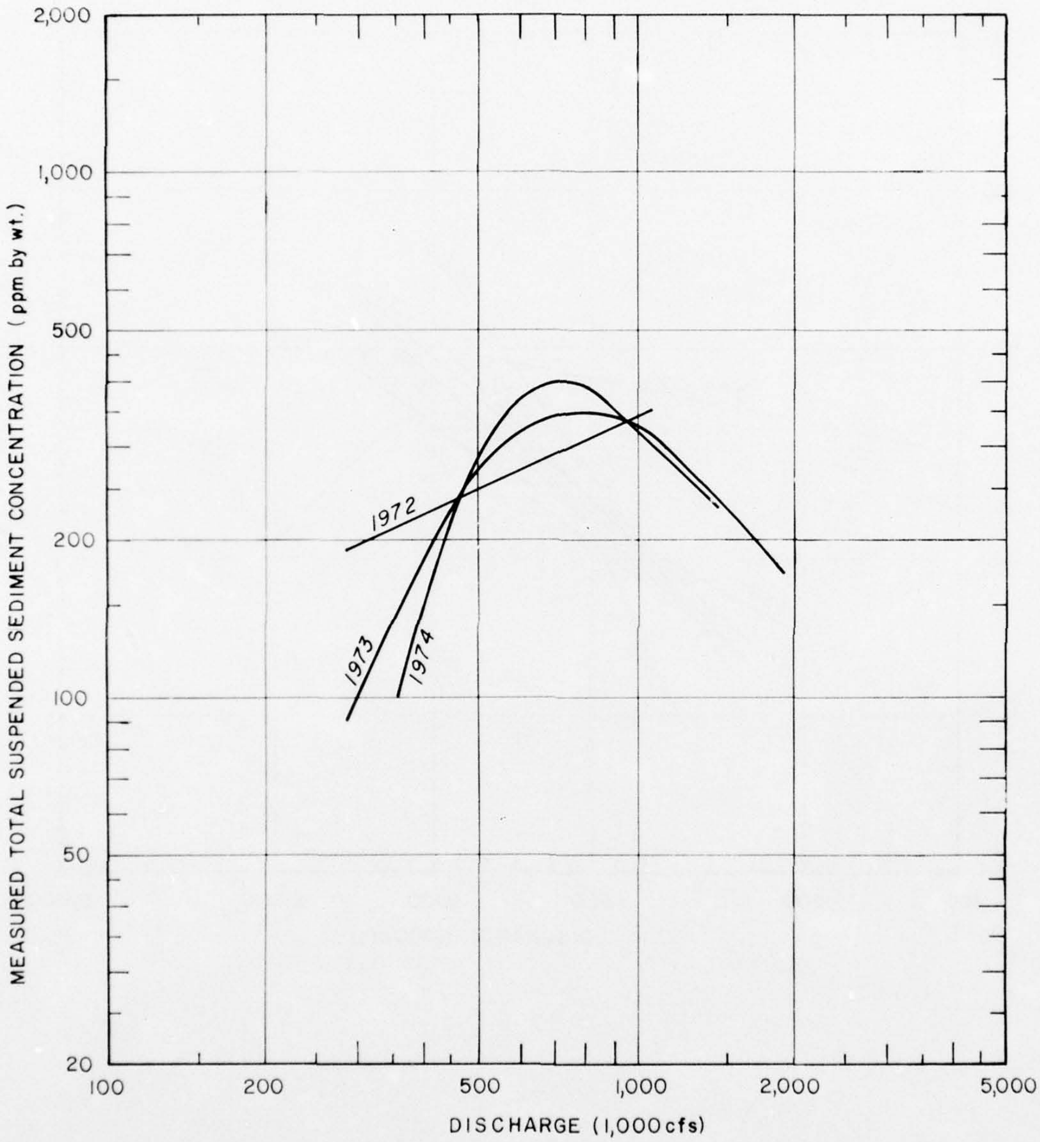
MEASURED TOTAL SUSPENDED SEDIMENT CONCENTRATION

VS DISCHARGE BY WATER YEAR

VICKSBURG DISCHARGE RANGE

MILE 435.41 AHP

FIGURE 31



MISSISSIPPI RIVER

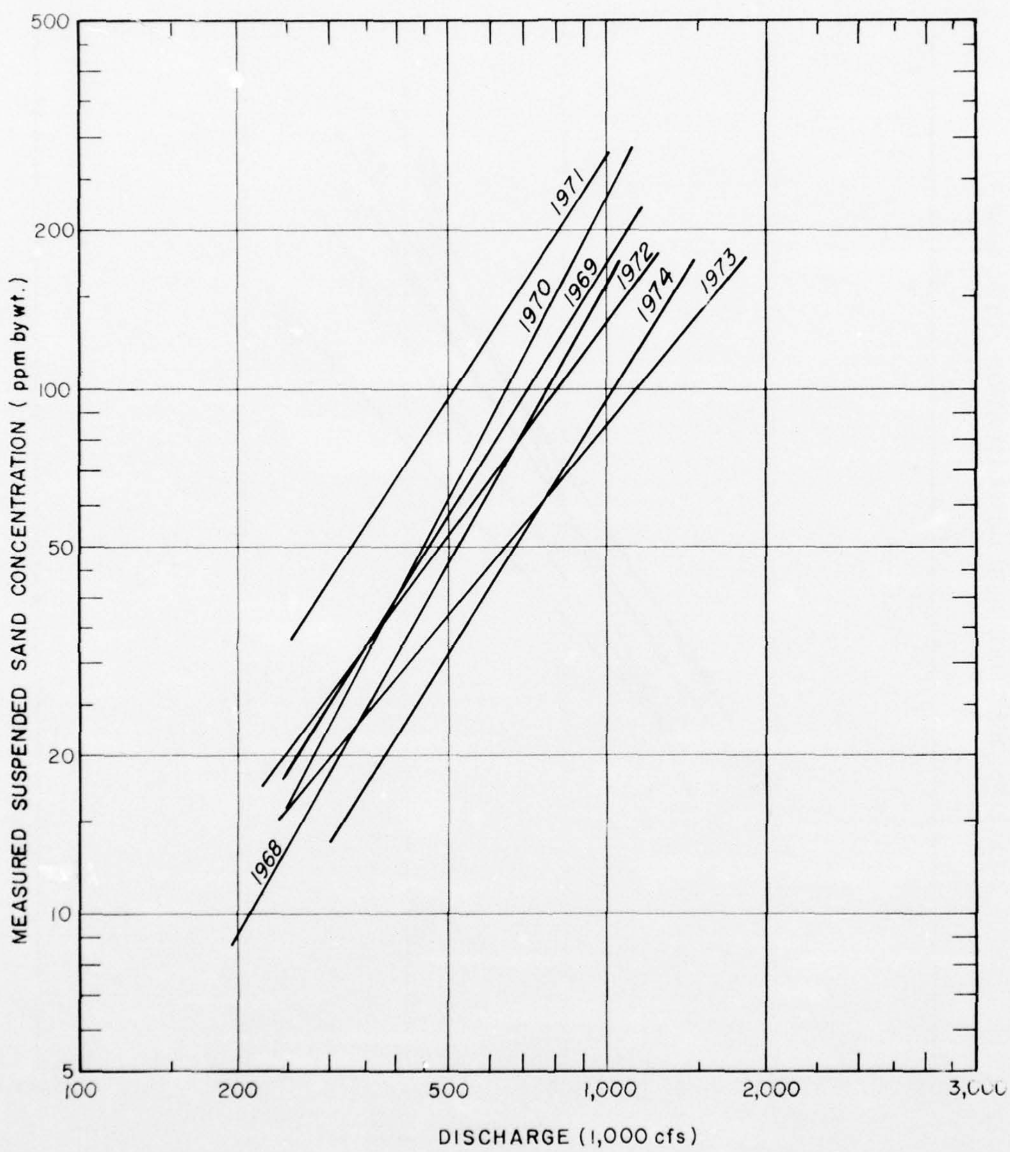
POTAMOLOGY STUDIES

MEASURED TOTAL SUSPENDED SEDIMENT CONCENTRATION VS DISCHARGE BY WATER YEAR

NATCHEZ DISCHARGE RANGE

MILE 362.34 AHP

FIGURE 32

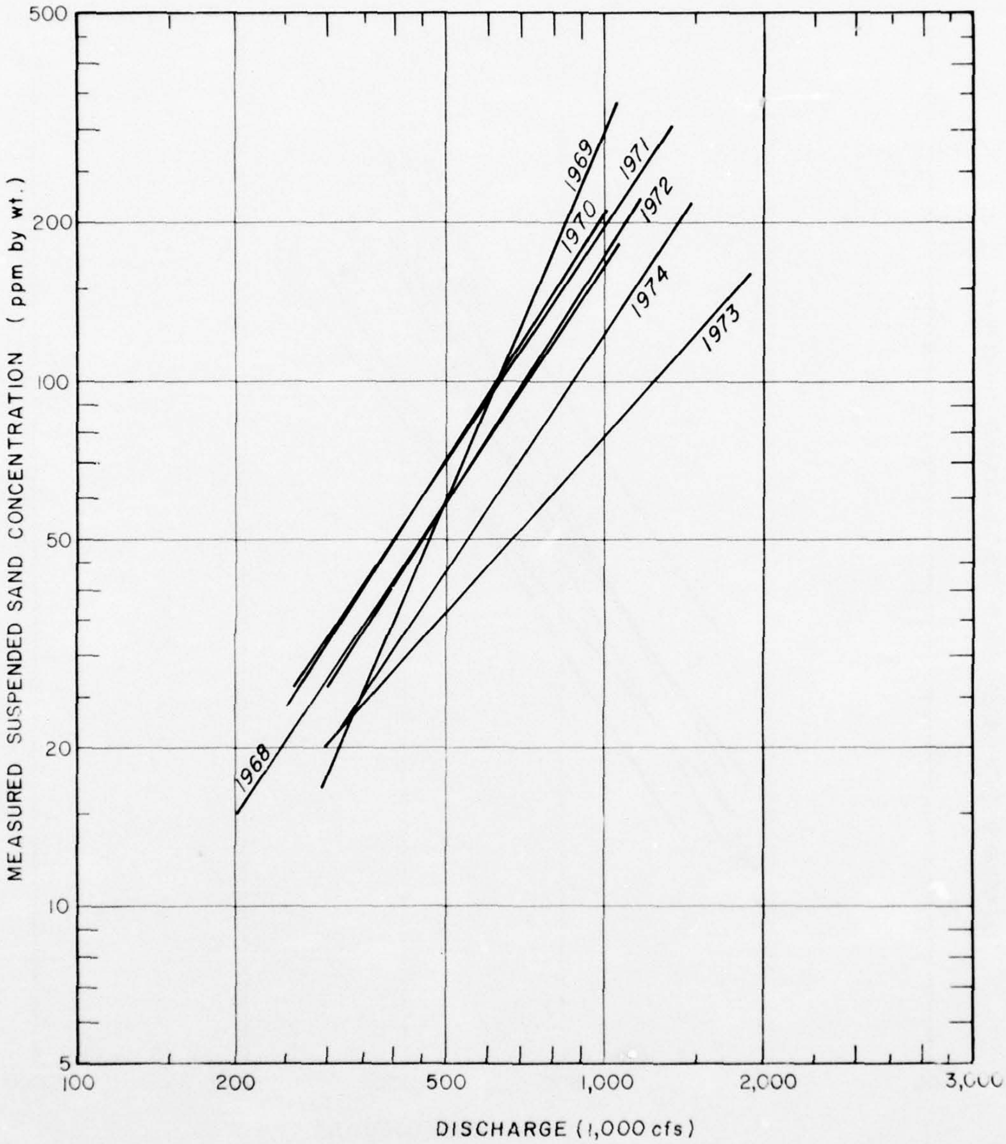


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

MEASURED SUSPENDED SAND CONCENTRATION
VS DISCHARGE BY WATER YEAR
ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 AHP

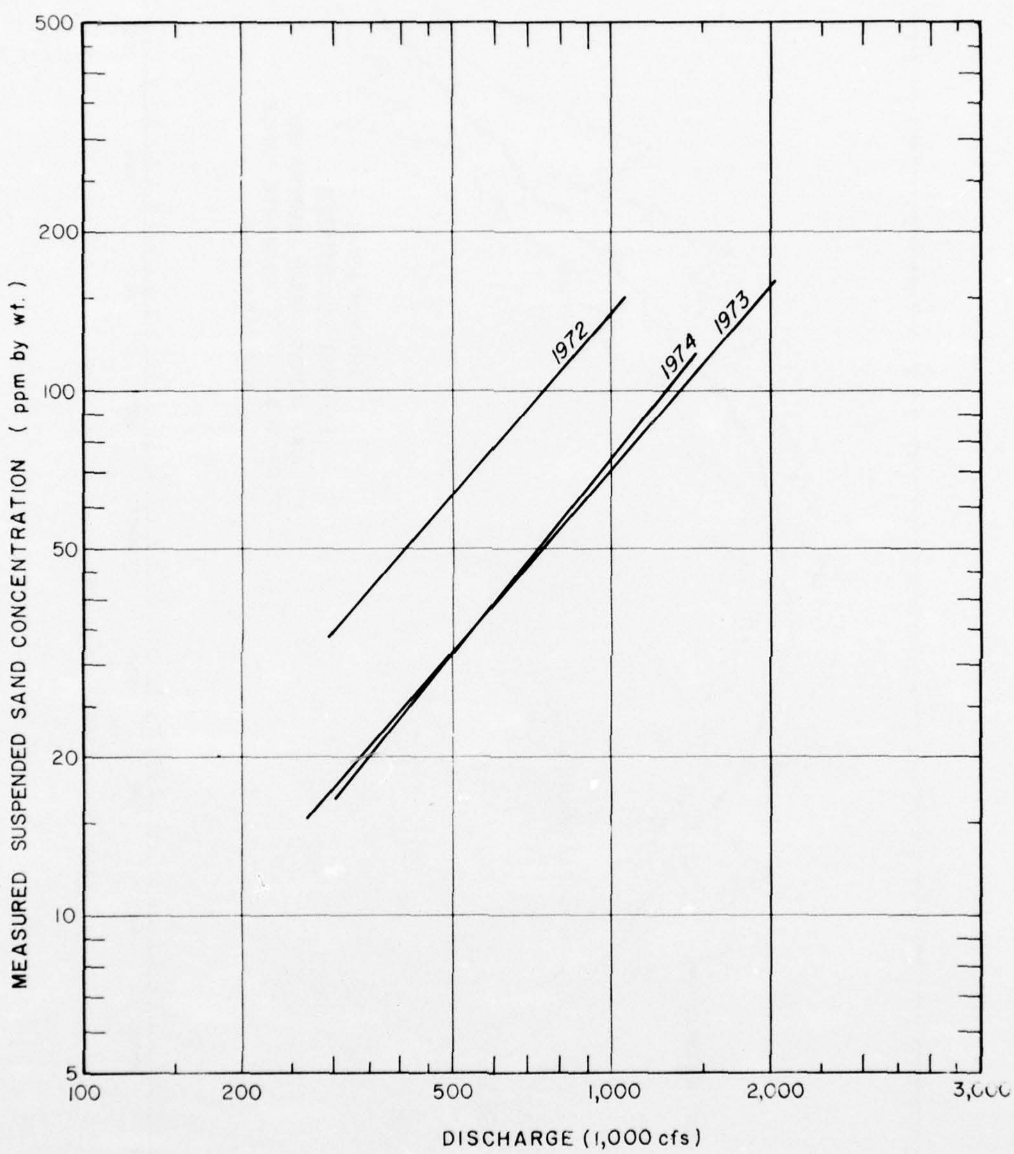
FIGURE 33



MISSISSIPPI RIVER

POTAMOLOGY STUDIES
MEASURED SUSPENDED SAND CONCENTRATION
VS DISCHARGE BY WATER YEAR
VICKSBURG DISCHARGE RANGE
MILE 435.41 AHP

FIGURE 34

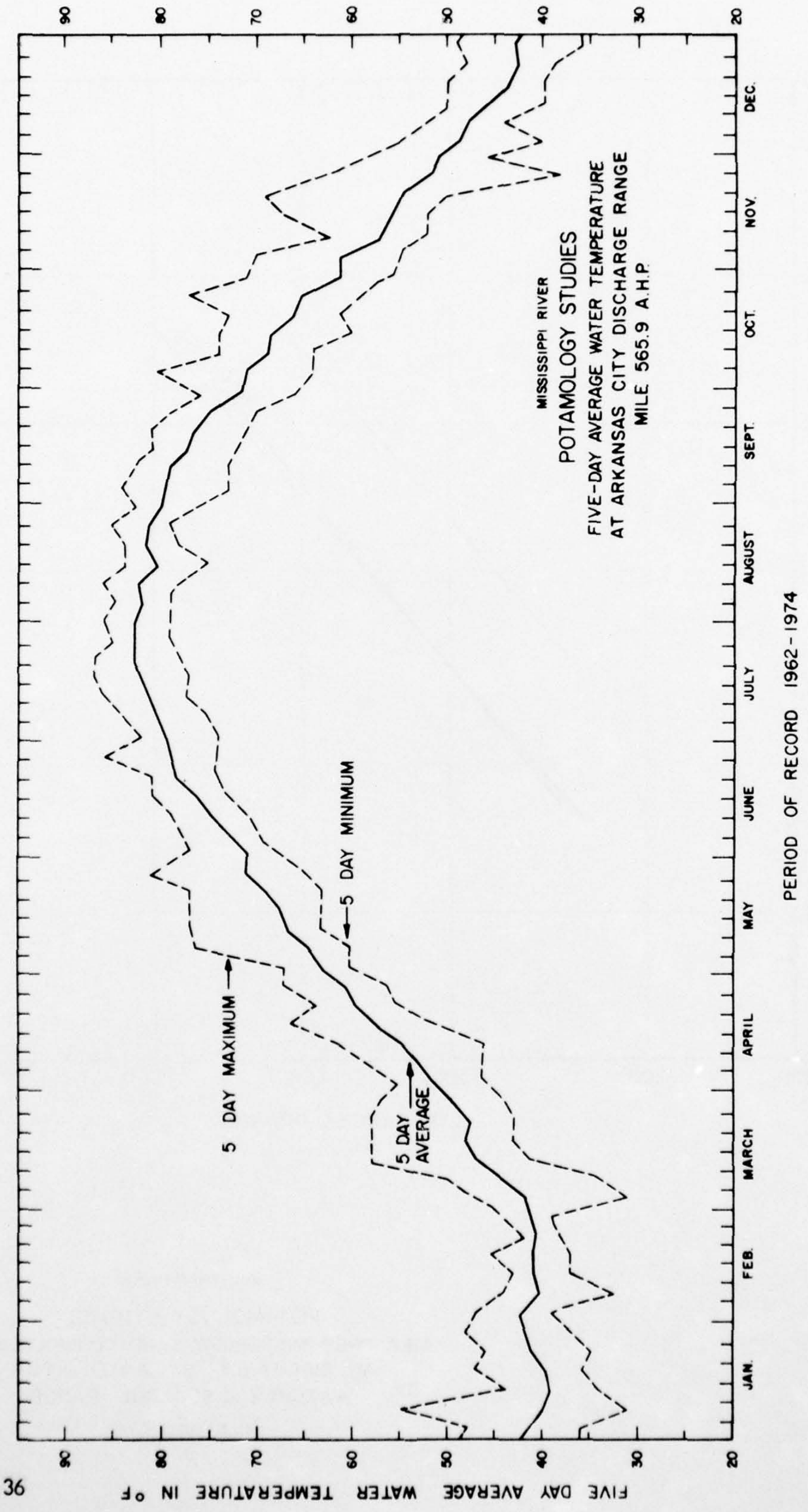


MISSISSIPPI RIVER

POTAMOLOGY STUDIES
MEASURED SUSPENDED SAND CONCENTRATION
VS DISCHARGE BY WATER YEAR
NATCHEZ DISCHARGE RANGE

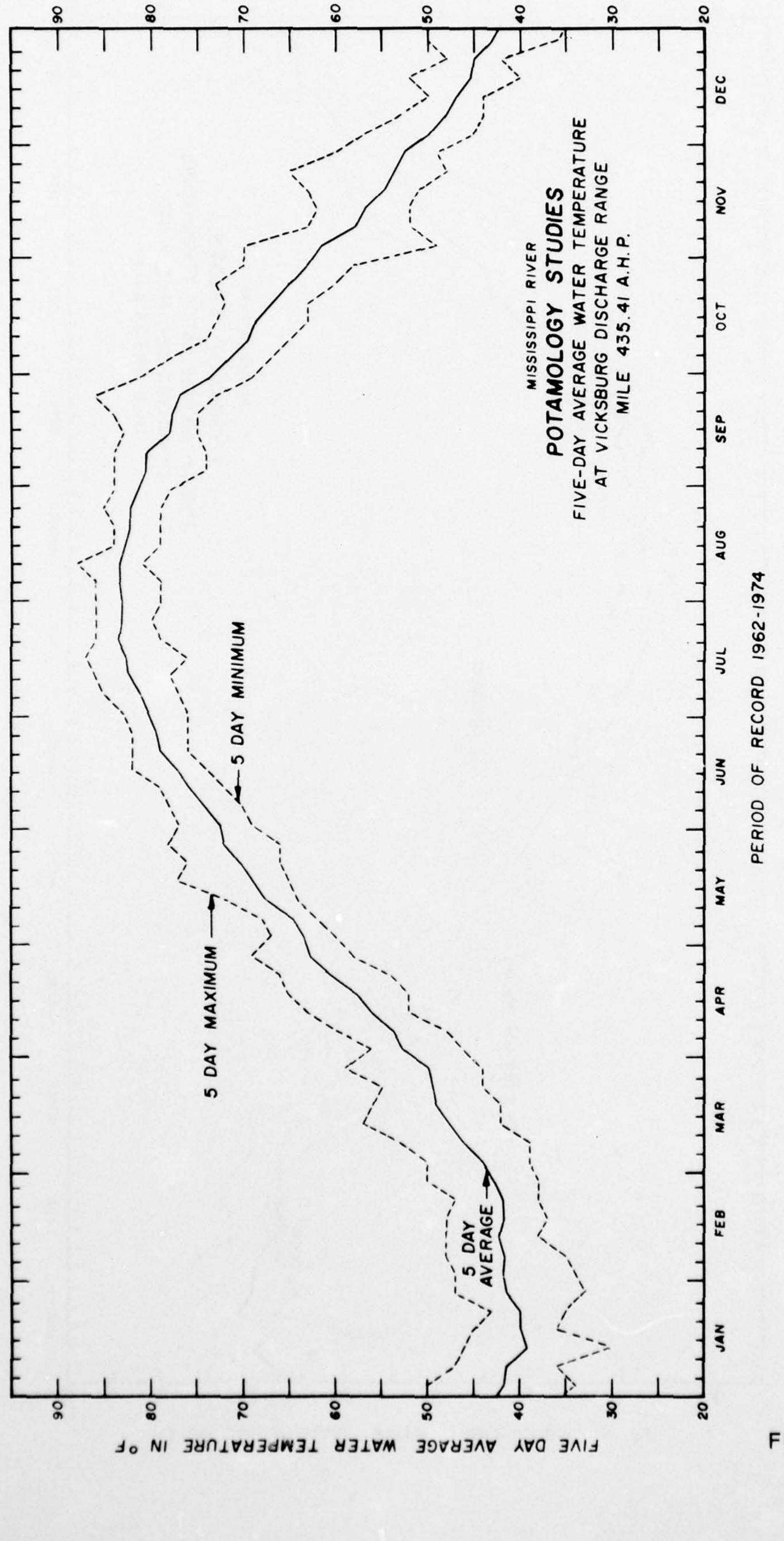
MILE 362.34 AHP

FIGURE 35



MISSISSIPPI RIVER
POTAMOLOGY STUDIES
FIVE-DAY AVERAGE WATER TEMPERATURE
AT ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 A.H.P.
5 DAY MAXIMUM
5 DAY AVERAGE
5 DAY MINIMUM
JAN.
FEB.
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPT.
OCT.
NOV.
DEC.
20
30
40
50
60
70
80
90
PERIOD OF RECORD 1962-1974
FIVE DAY AVERAGE WATER TEMPERATURE IN °F

FIGURE 36



MISSISSIPPI RIVER
POTAMOLOGY STUDIES
FIVE-DAY AVERAGE WATER TEMPERATURE
AT VICKSBURG DISCHARGE RANGE
MILE 435.41 A.H.P.
5 DAY MAXIMUM
5 DAY MINIMUM
5 DAY AVERAGE
FIVE DAY AVERAGE WATER TEMPERATURE IN °F
PERIOD OF RECORD 1962-1974
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
20
30
40
50
60
70
80
90

FIGURE 37

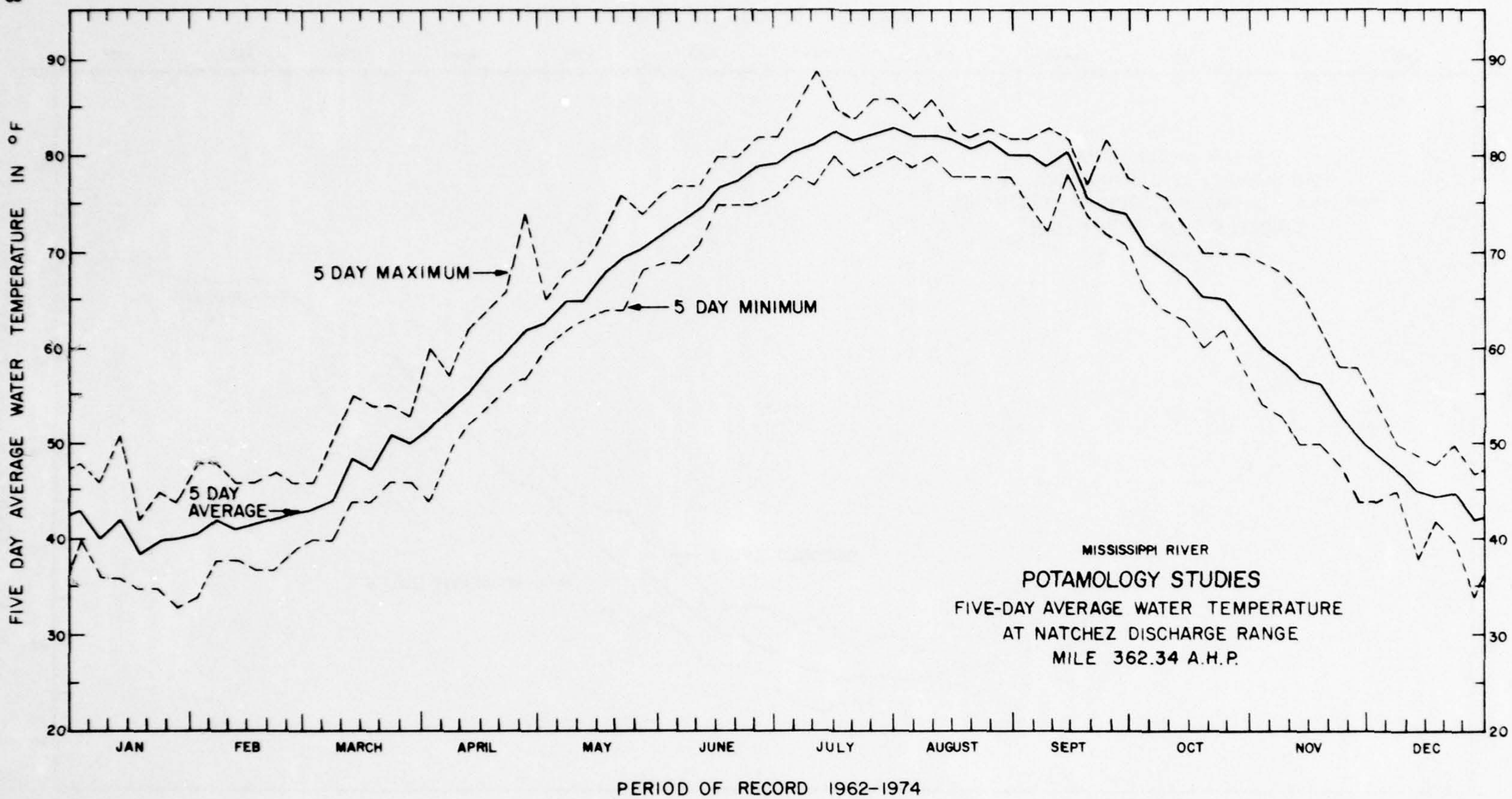
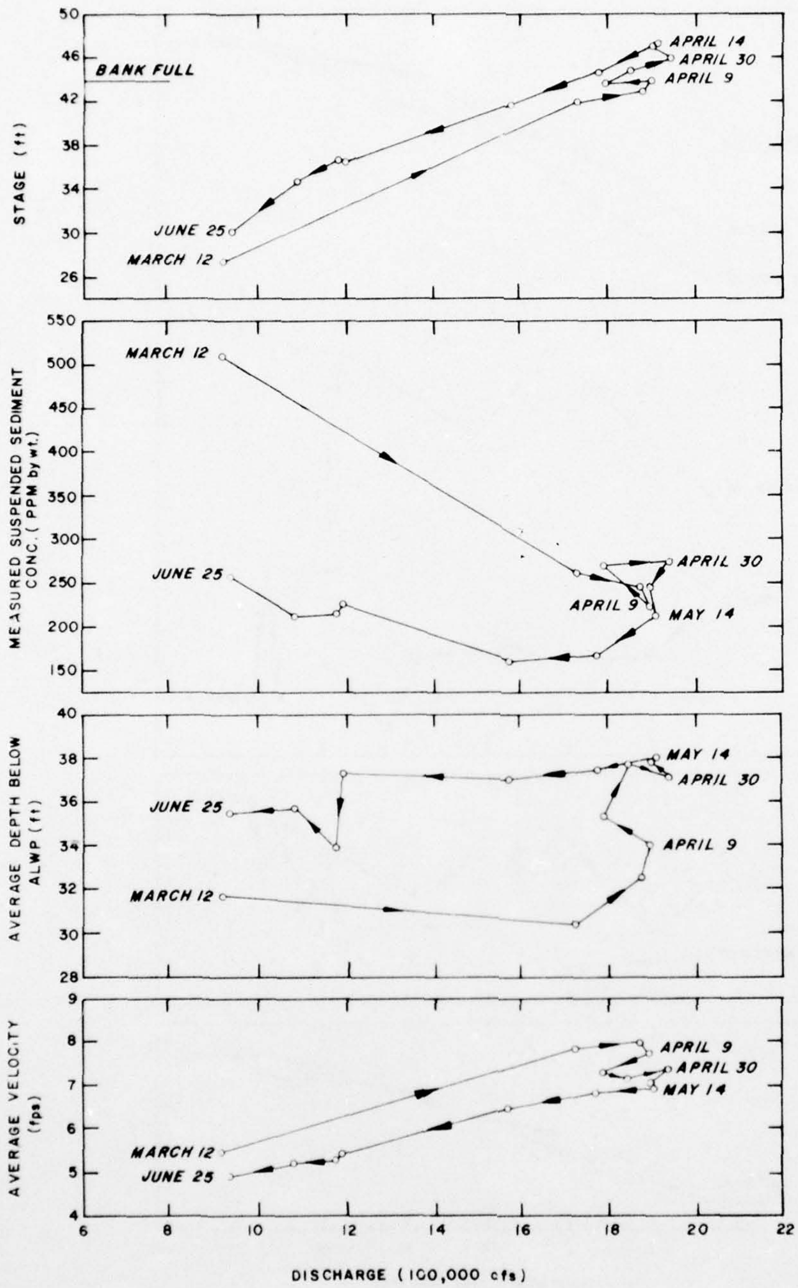
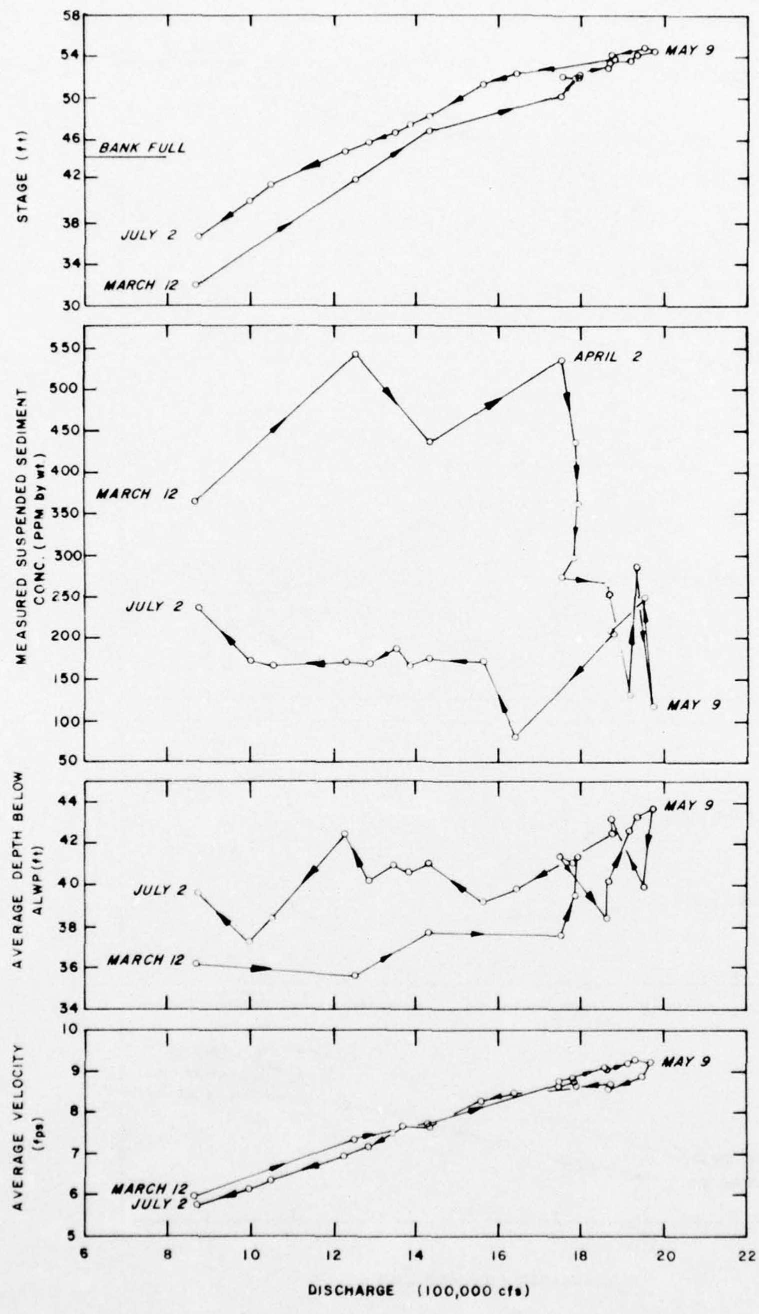

MISSISSIPPI RIVER
POTAMOLOGY STUDIES
FIVE-DAY AVERAGE WATER TEMPERATURE
AT NATCHEZ DISCHARGE RANGE
MILE 362.34 A.H.P.
5 DAY MAXIMUM
5 DAY MINIMUM
5 DAY AVERAGE
FIVE DAY AVERAGE WATER TEMPERATURE IN °F
20
30
40
50
60
70
80
90
JAN
FEB
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPT
OCT
NOV
DEC
PERIOD OF RECORD 1962–1974

FIGURE 38



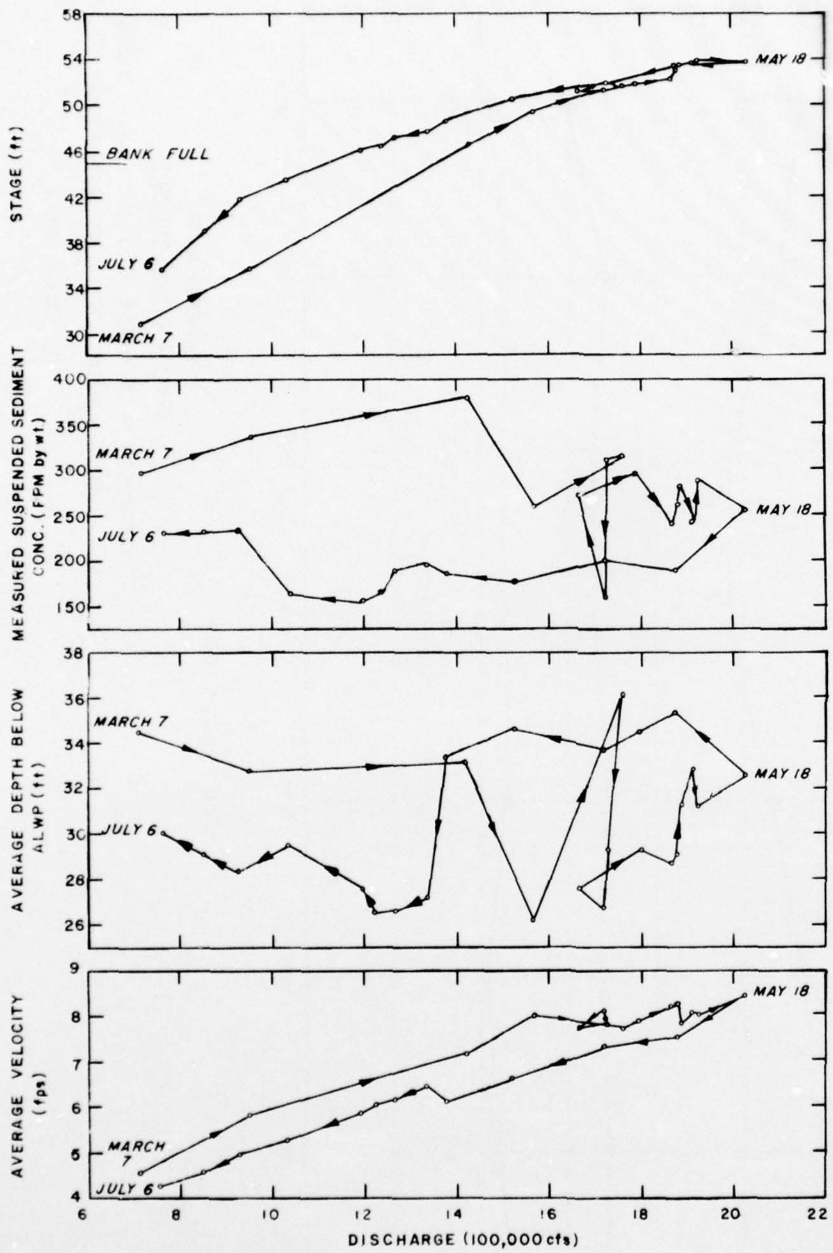
MISSISSIPPI RIVER
POTAMOLOGY STUDIES
RELATION OF STAGE, SUSPENDED SEDIMENT
CONCENTRATION, DEPTH BELOW ALWP
AND VELOCITY TO DISCHARGE AT ARKANSAS CITY
DISCHARGE RANGE, MILE 565.9 DURING
MAJOR RISE OF 1973

FIGURE 39



MISSISSIPPI RIVER
POTAMOLOGY STUDIES
RELATION OF STAGE, SUSPENDED SEDIMENT CONCENTRATION, DEPTH BELOW ALWP AND VELOCITY TO DISCHARGE AT VICKSBURG DISCHARGE RANGE, MILE 435.41 DURING MAJOR RISE OF 1973

FIGURE 40

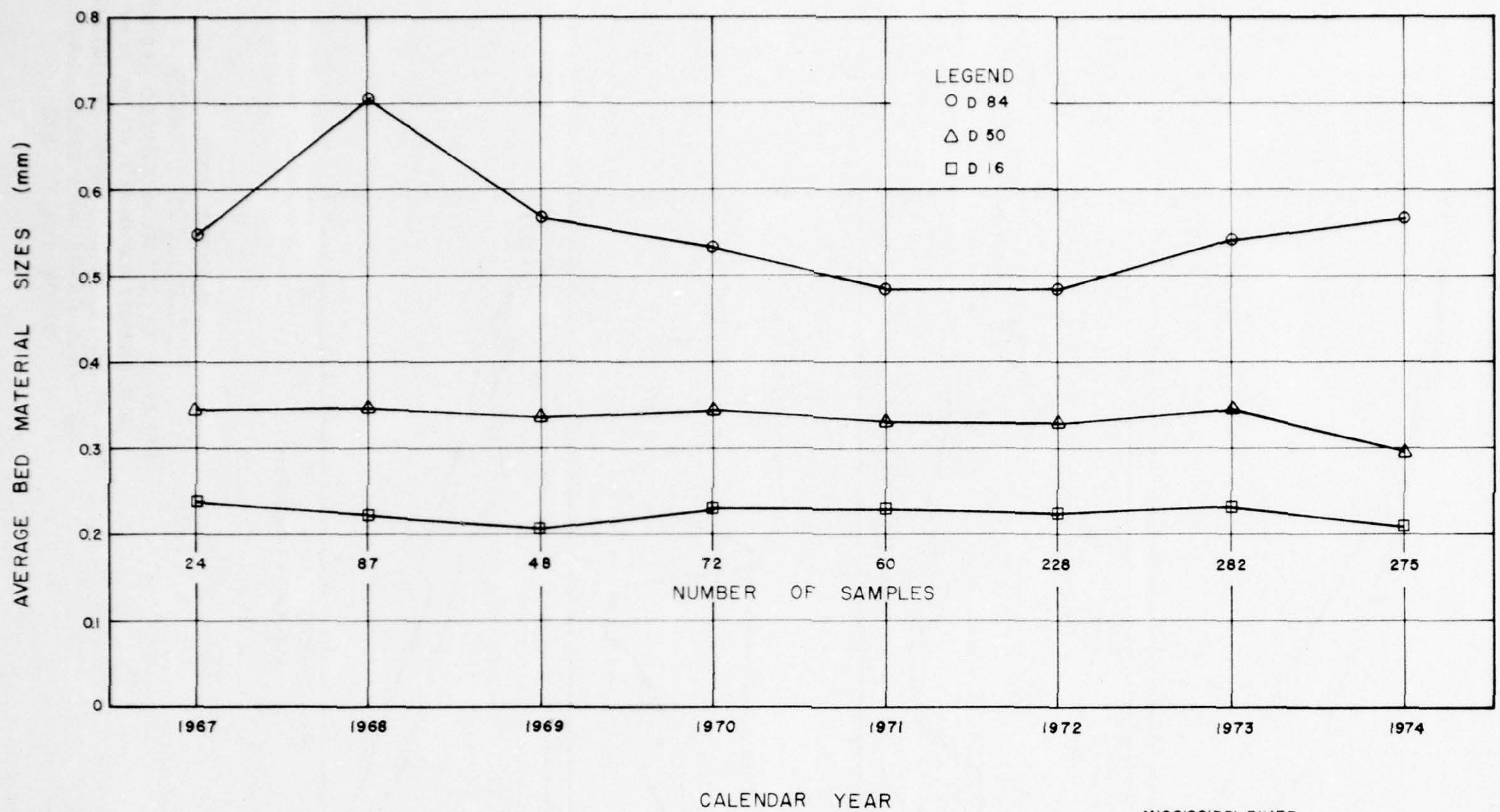


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

RELATION OF STAGE, SUSPENDED SEDIMENT CONCENTRATION, DEPTH BELOW ALWP AND VELOCITY TO DISCHARGE AT NATCHEZ DISCHARGE RANGE, MILE 362.34, DURING MAJOR RISE OF 1973

FIGURE 41



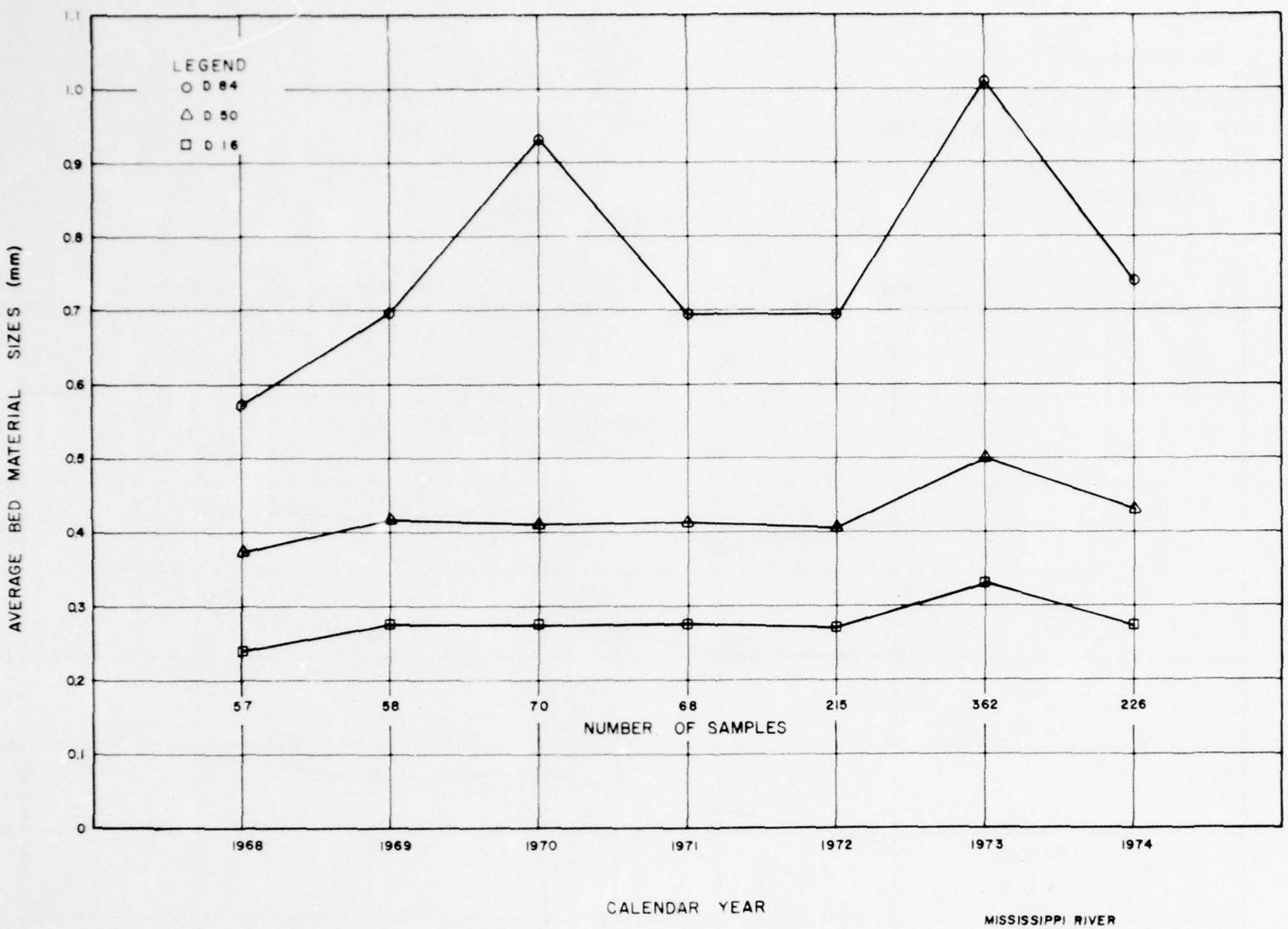
MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN AVERAGE BED MATERIAL SIZES
AT ARKANSAS CITY DISCHARGE RANGE

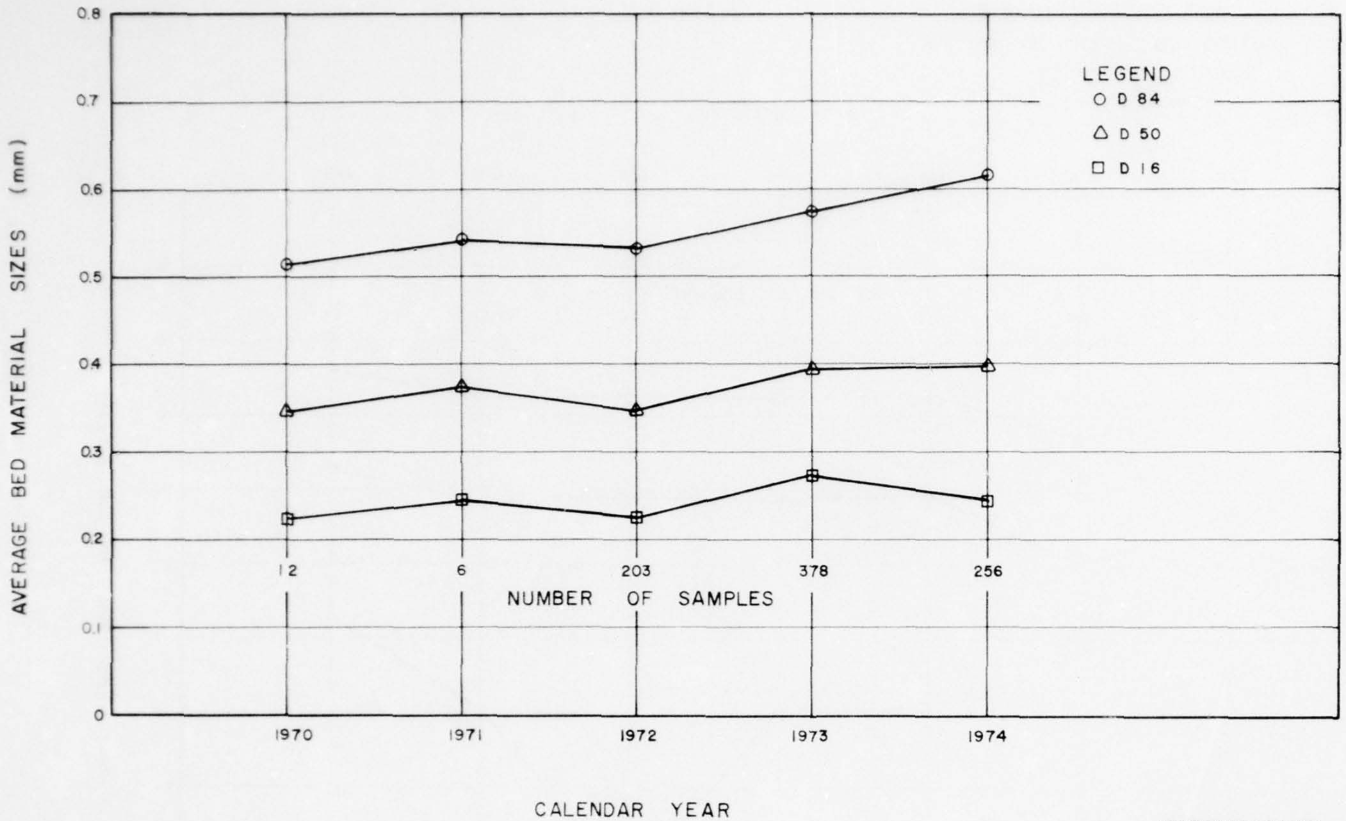
MILE 565.9 AHP

FIGURE 42



MISSISSIPPI RIVER
POTAMOLOGY STUDIES
VARIATION IN AVERAGE BED MATERIAL SIZES
AT VICKSBURG DISCHARGE RANGE
MILE 435.41 AHP

FIGURE 43



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN AVERAGE BED MATERIAL SIZES

AT NATCHEZ DISCHARGE RANGE

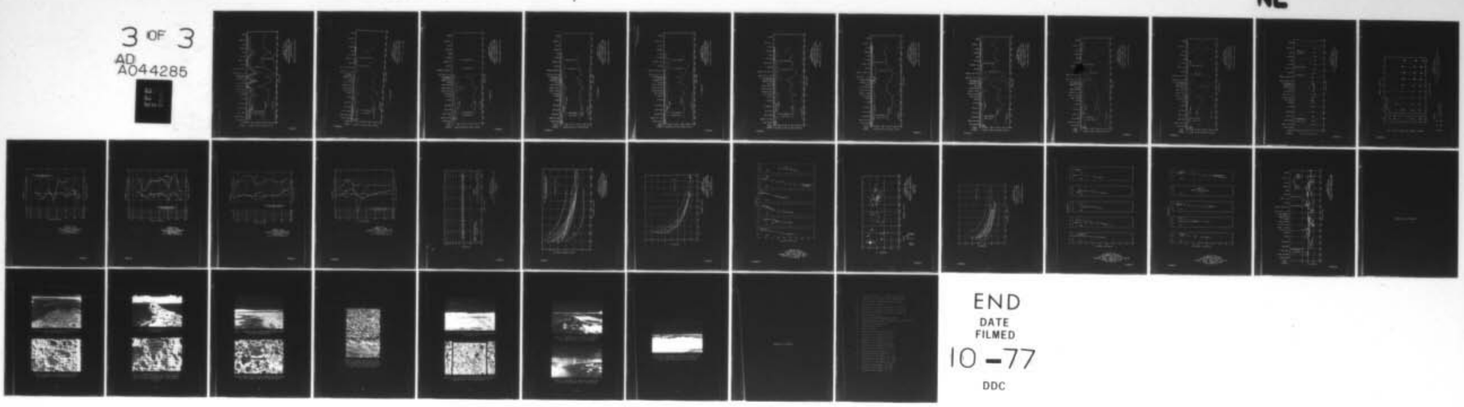
MILE 362.34 AHP

FIGURE 44

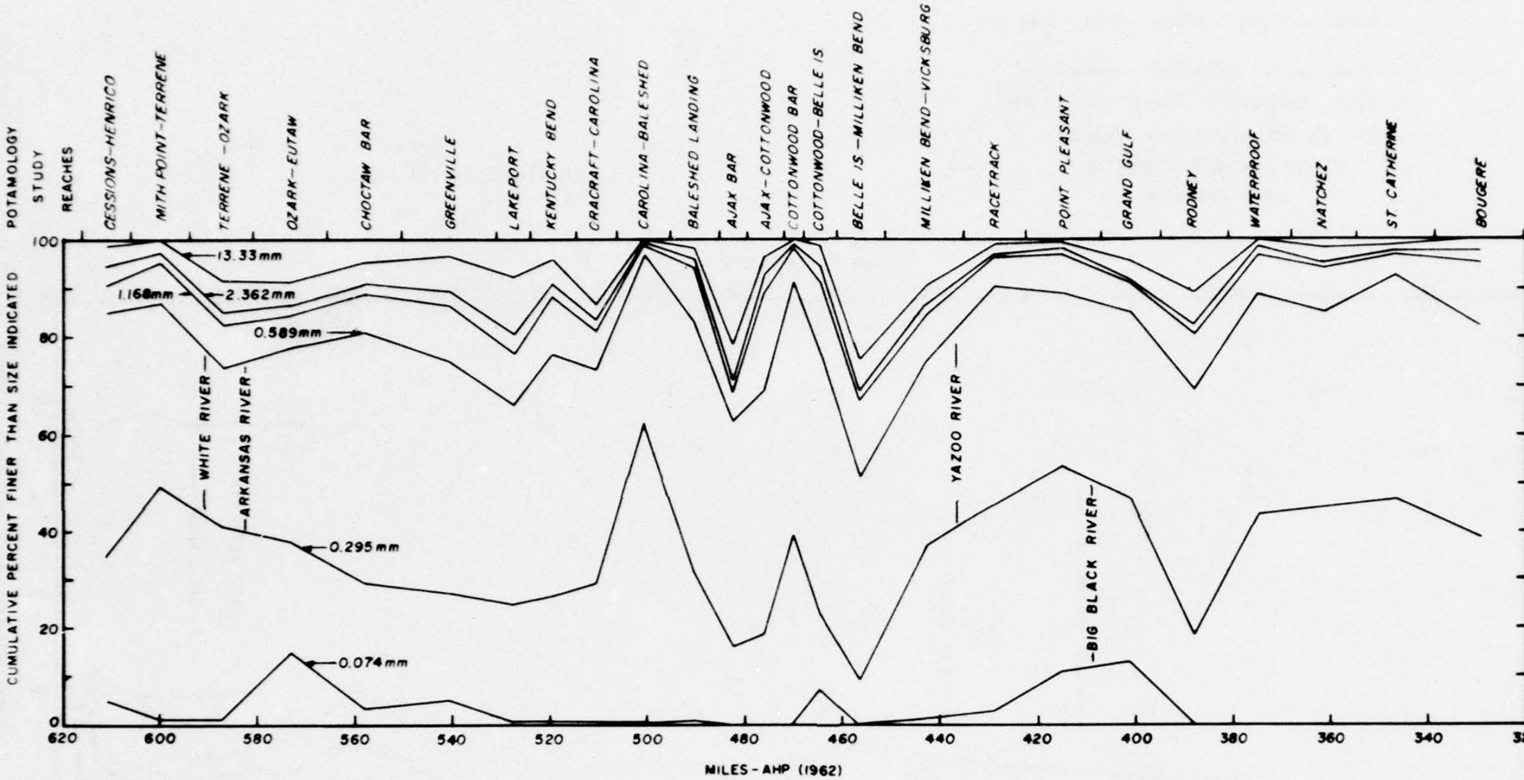
AD-A044 285 ARMY ENGINEER DISTRICT VICKSBURG MISS F/G 8/8
SUSPENDED SEDIMENT AND BED MATERIAL STUDIES ON THE LOWER MISSIS--ETC(U)
AUG 77 L G ROBBINS

UNCLASSIFIED 300-1 NL

3 OF 3
AD
A044285



END
DATE
FILMED
10-77
DDC



MISSISSIPPI RIVER

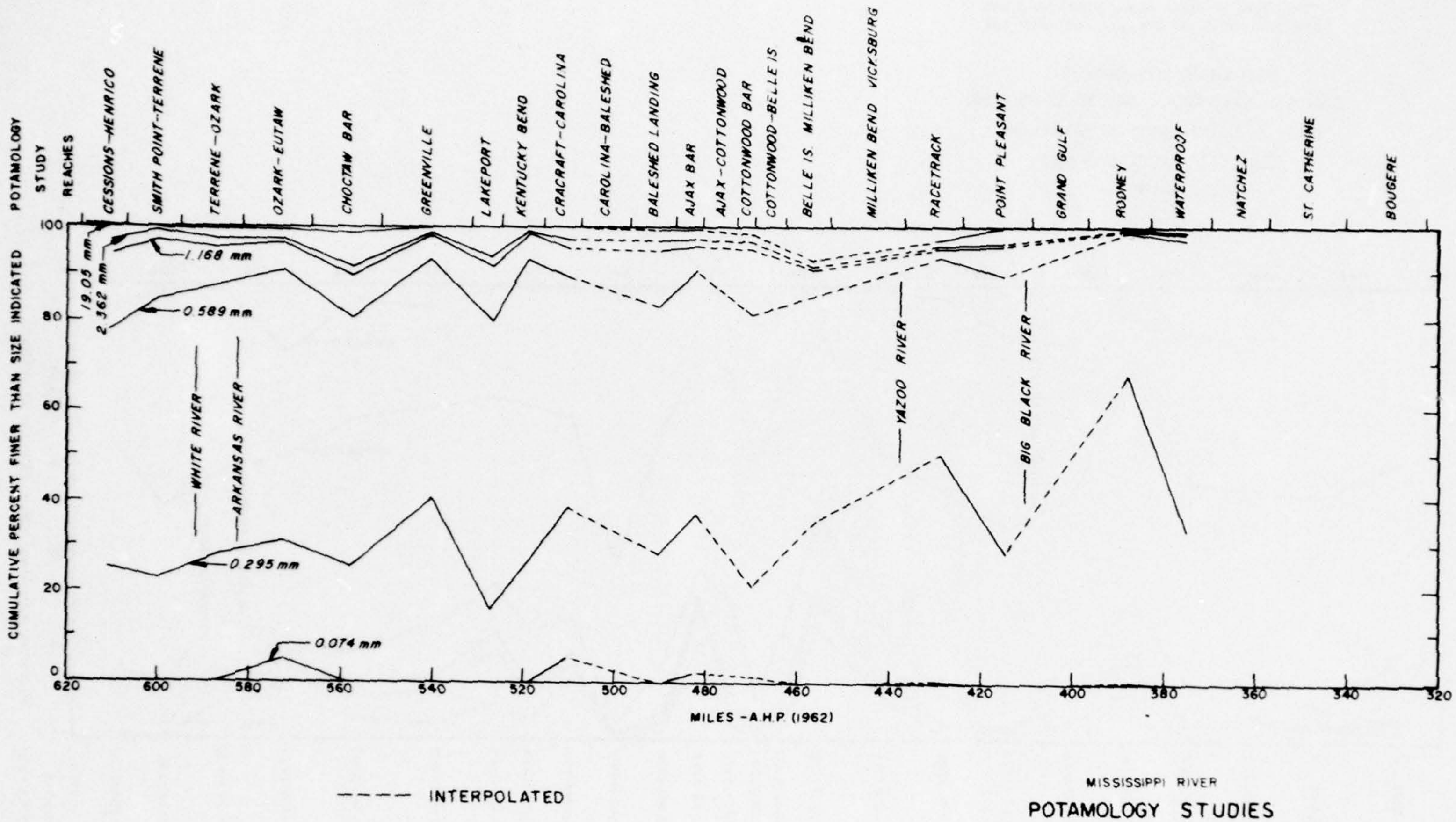
POTAMOLOGY STUDIES

VARIATION IN COMPOSITION OF BED MATERIALS IN THE VICKSBURG DISTRICT DURING AUG-SEPT 1932

304 SAMPLES AVERAGED BY STUDY REACHES
BASED ON DATA IN WES PAPER 17 DATED 1935

FIGURE 45

FIGURE 46

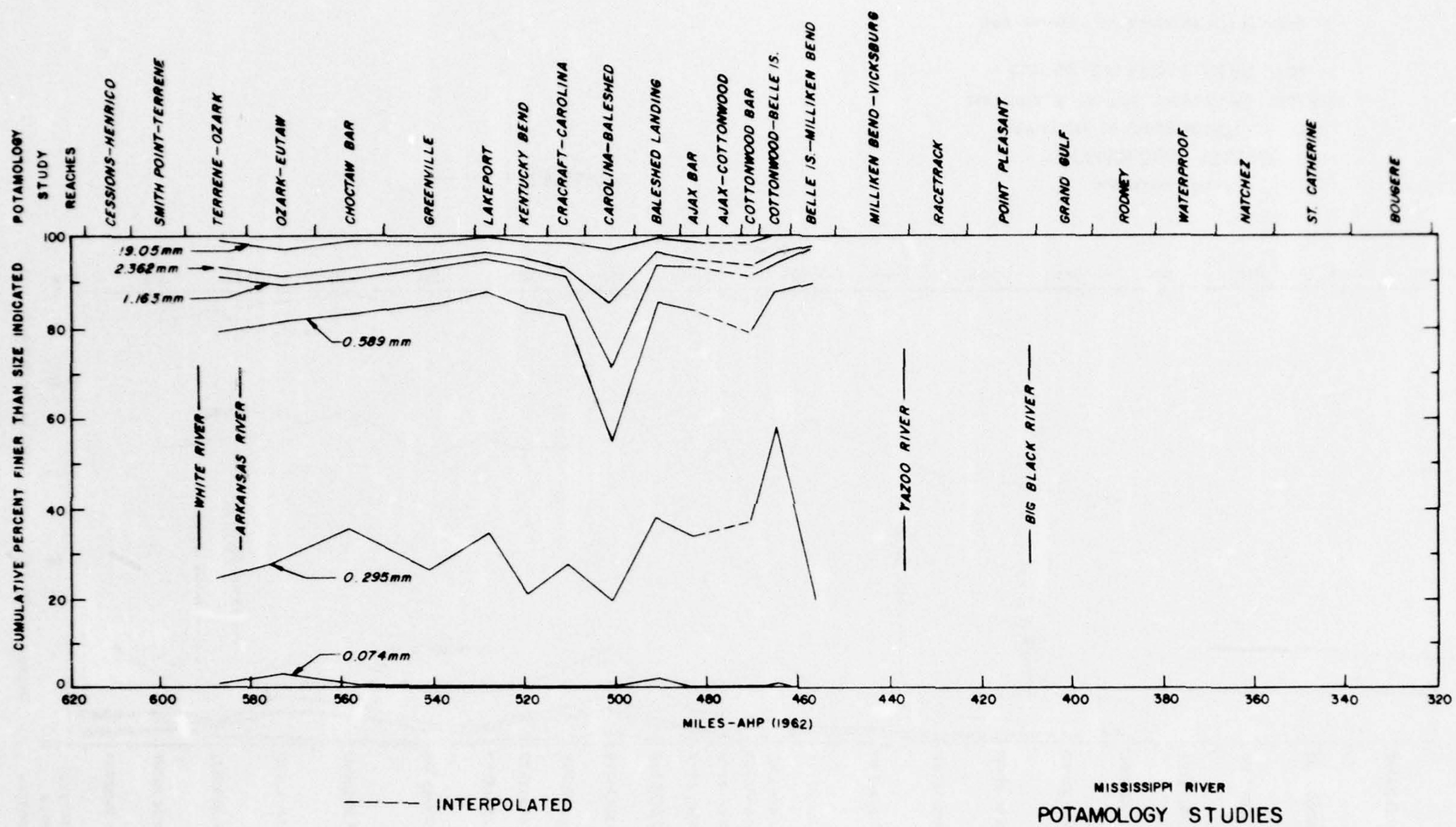


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN COMPOSITION OF BED MATERIALS IN THE VICKSBURG DISTRICT DURING CALENDAR YEAR 1966

375 SAMPLES AVERAGED BY STUDY REACHES



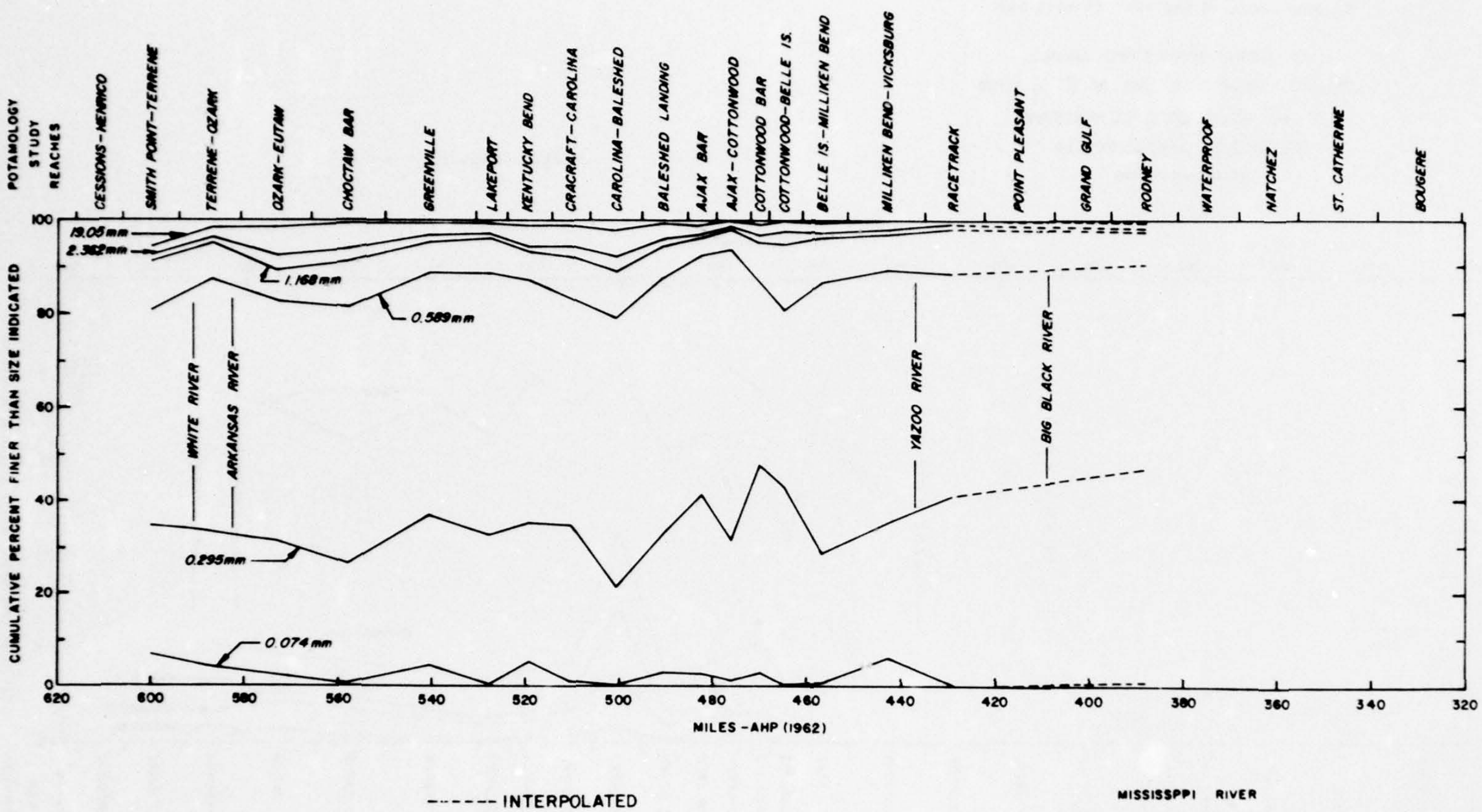
MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN COMPOSITION OF BED MATERIALS IN THE VICKSBURG DISTRICT DURING CALENDAR YEAR 1967

450 SAMPLES AVERAGED BY STUDY REACHES

FIGURE 47



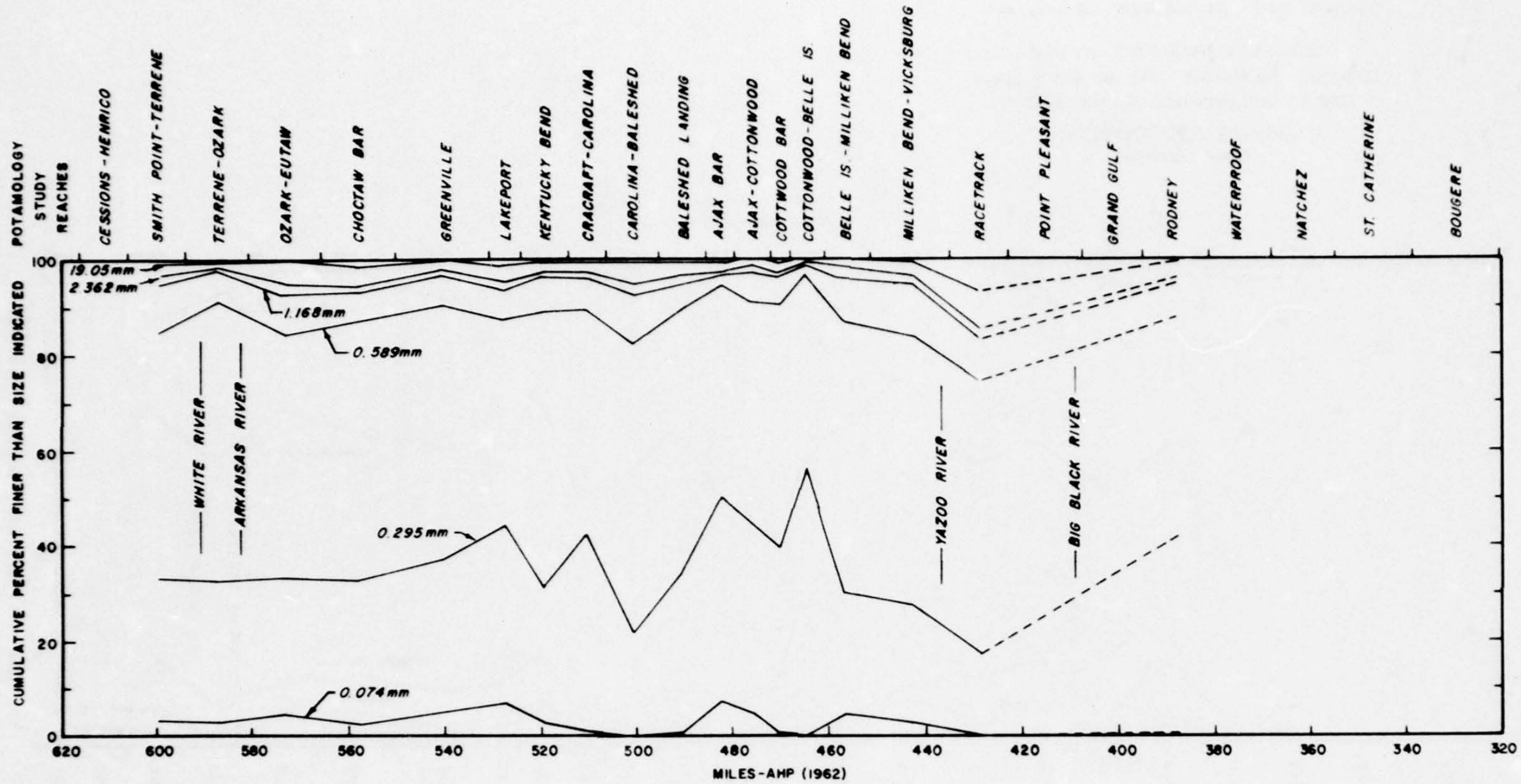
MISSISSPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN COMPOSITION OF BED MATERIALS IN THE VICKSBURG DISTRICT DURING CALENDAR YEAR 1968

989 SAMPLES AVERAGED BY STUDY REACHES

FIGURE 48

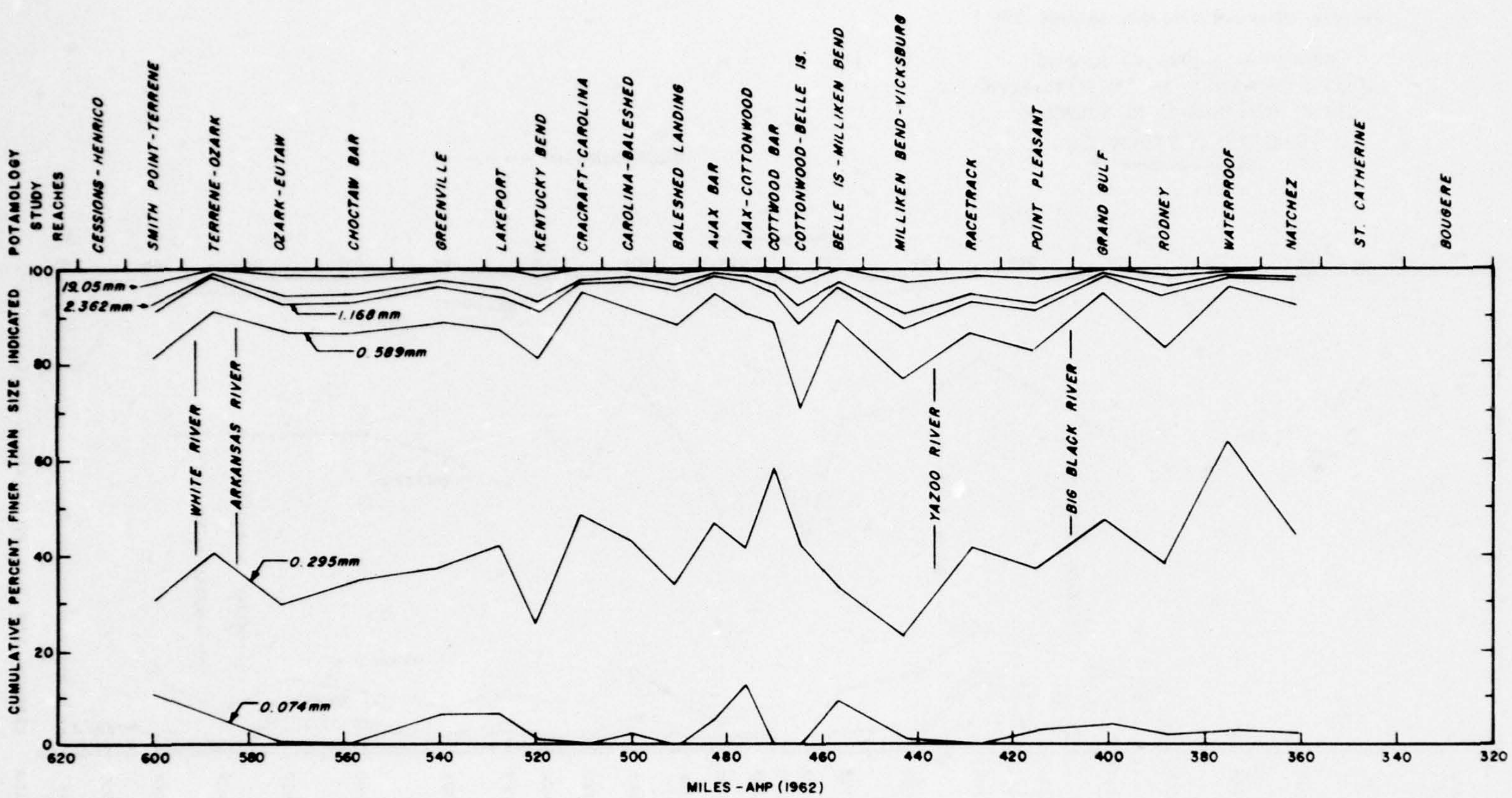


----- INTERPOLATED

MISSISSIPPI RIVER
POTAMOLOGY STUDIES
VARIATION IN COMPOSITION OF BED MATERIALS IN THE VICKSBURG DISTRICT DURING CALENDAR YEAR 1969

1125 SAMPLES AVERAGED BY STUDY REACHES

FIGURE 49



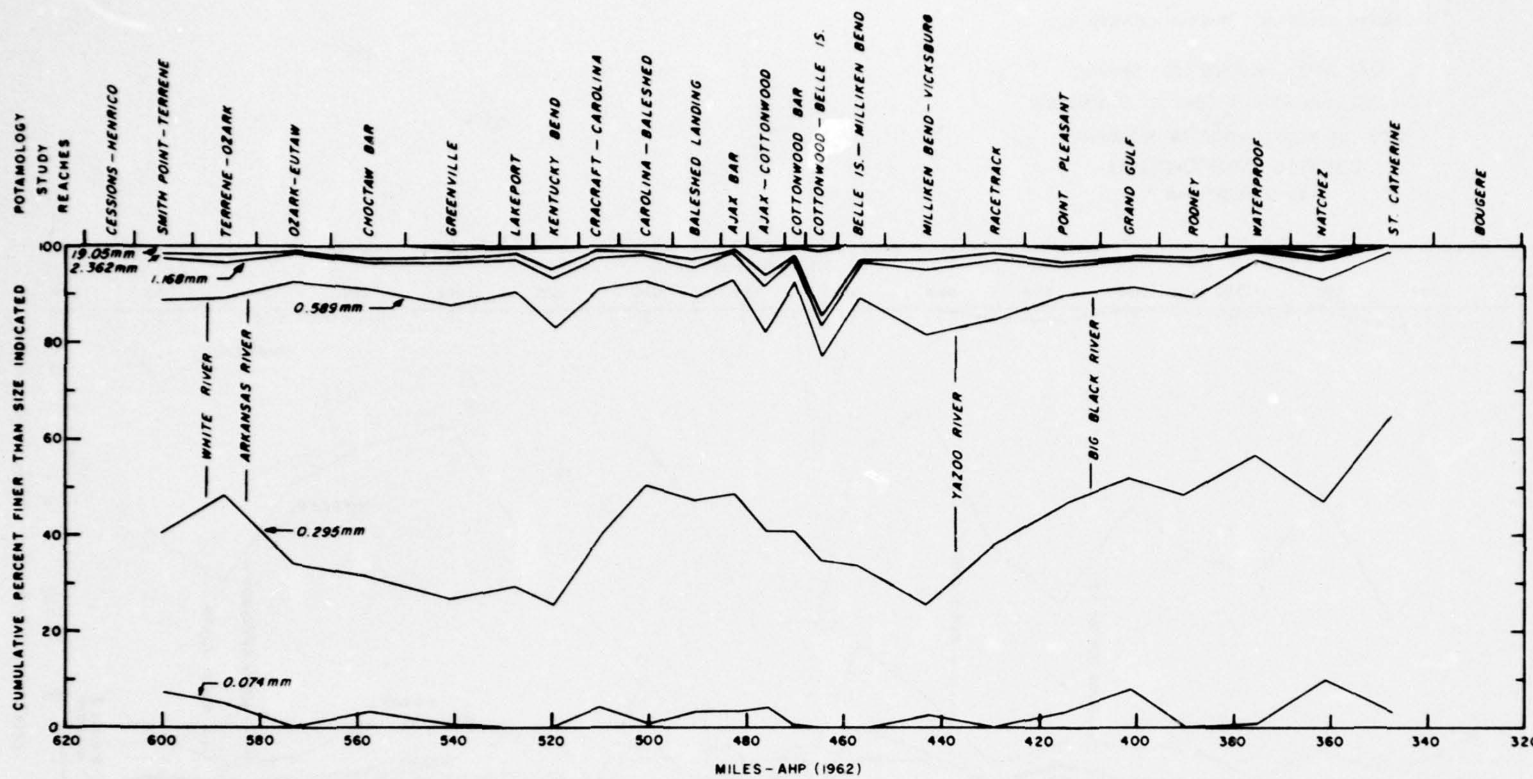
MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN COMPOSITION OF BED
MATERIALS IN THE VICKSBURG DISTRICT
DURING CALENDAR YEAR 1970

986 SAMPLES AVERAGED BY STUDY REACHES

FIGURE 50



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN COMPOSITION OF BED MATERIALS IN THE VICKSBURG DISTRICT DURING CALENDAR YEAR 1971

965 SAMPLES AVERAGED BY STUDY REACHES

FIGURE 51

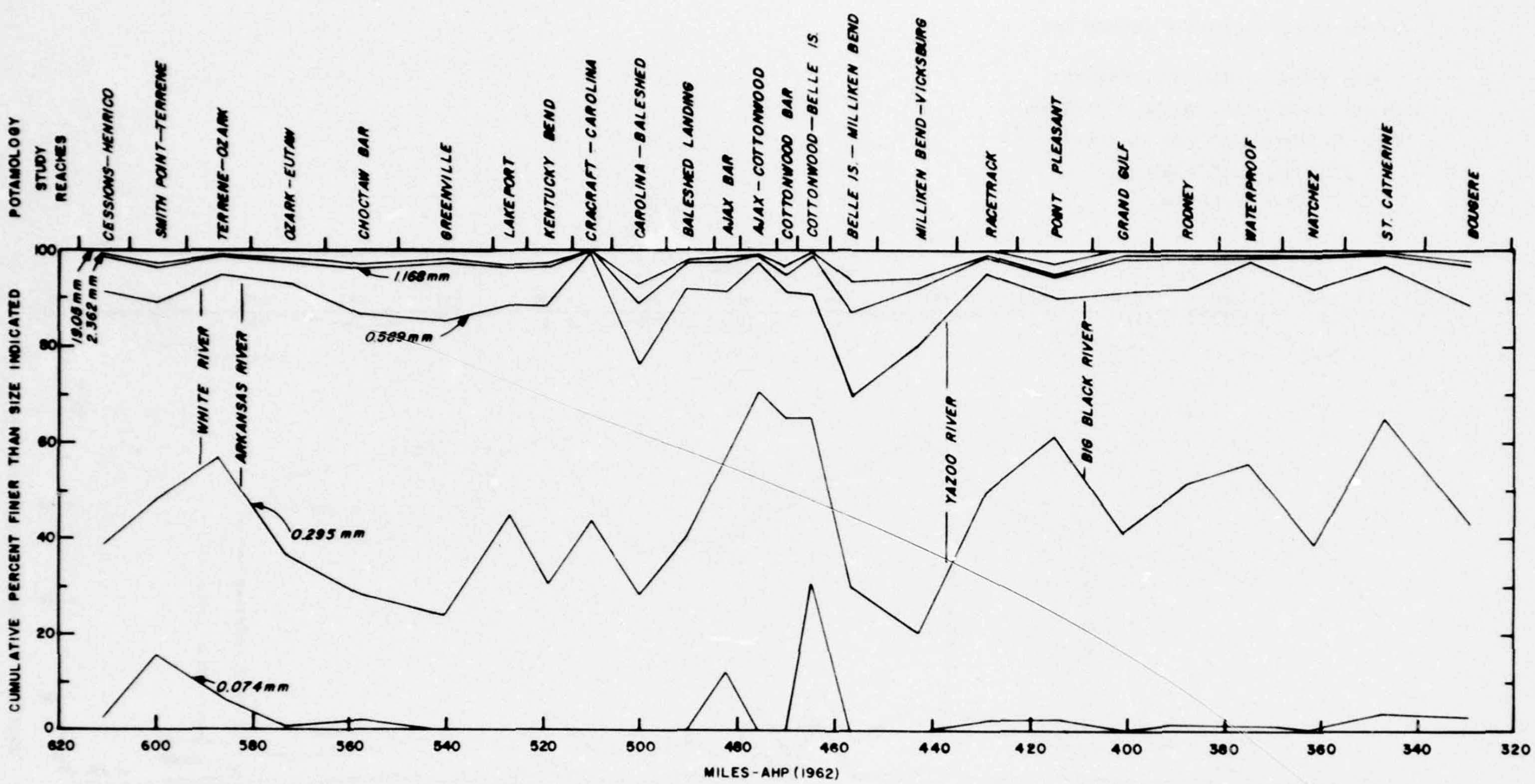


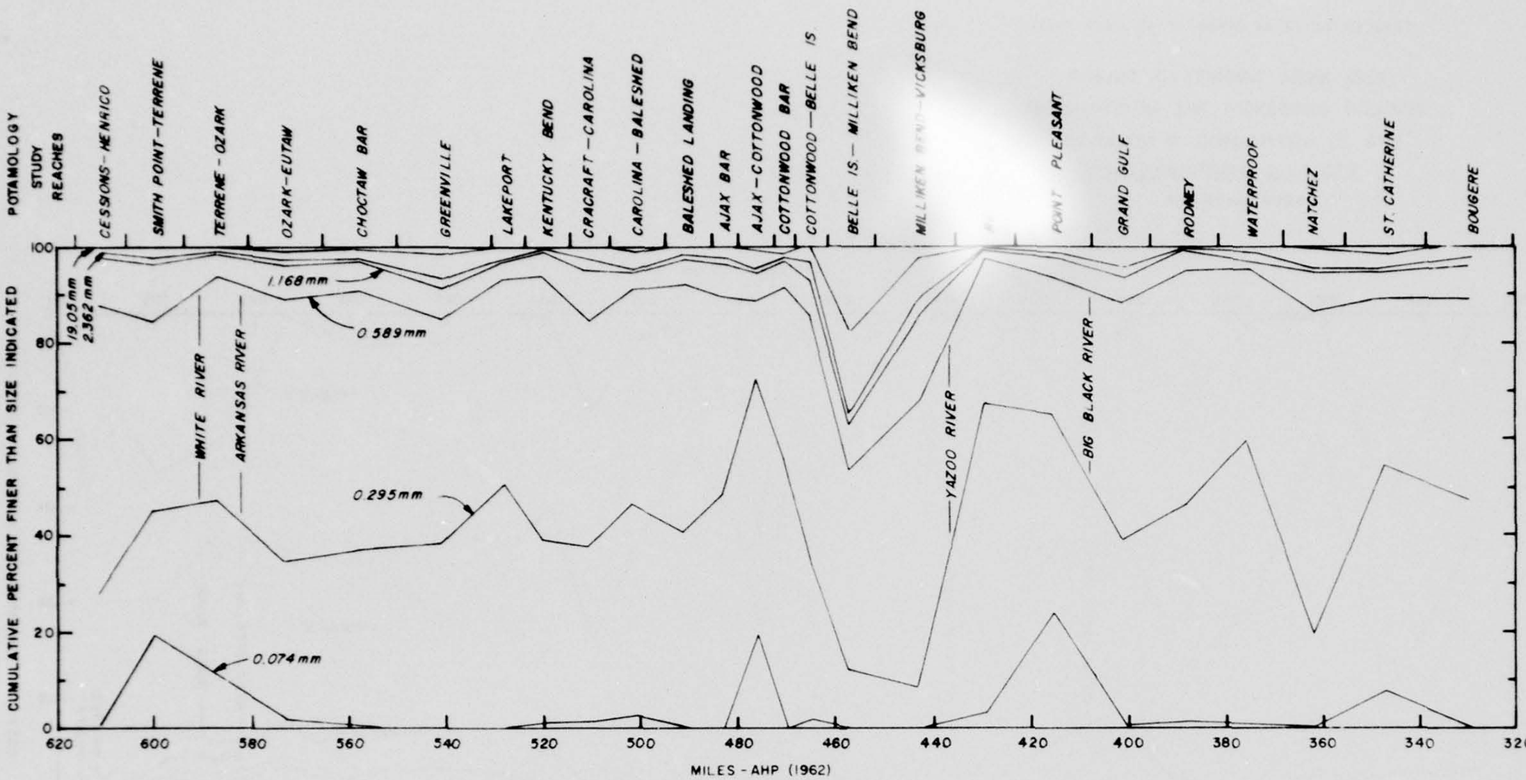
FIGURE 52

MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN COMPOSITION OF BED MATERIALS IN THE VICKSBURG DISTRICT DURING CALENDAR YEAR 1972

1227 SAMPLES AVERAGED BY STUDY REACHES



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN COMPOSITION OF BED MATERIALS IN THE VICKSBURG DISTRICT DURING CALENDAR YEAR 1973

1425 SAMPLES AVERAGED BY STUDY REACHES

FIGURE 53

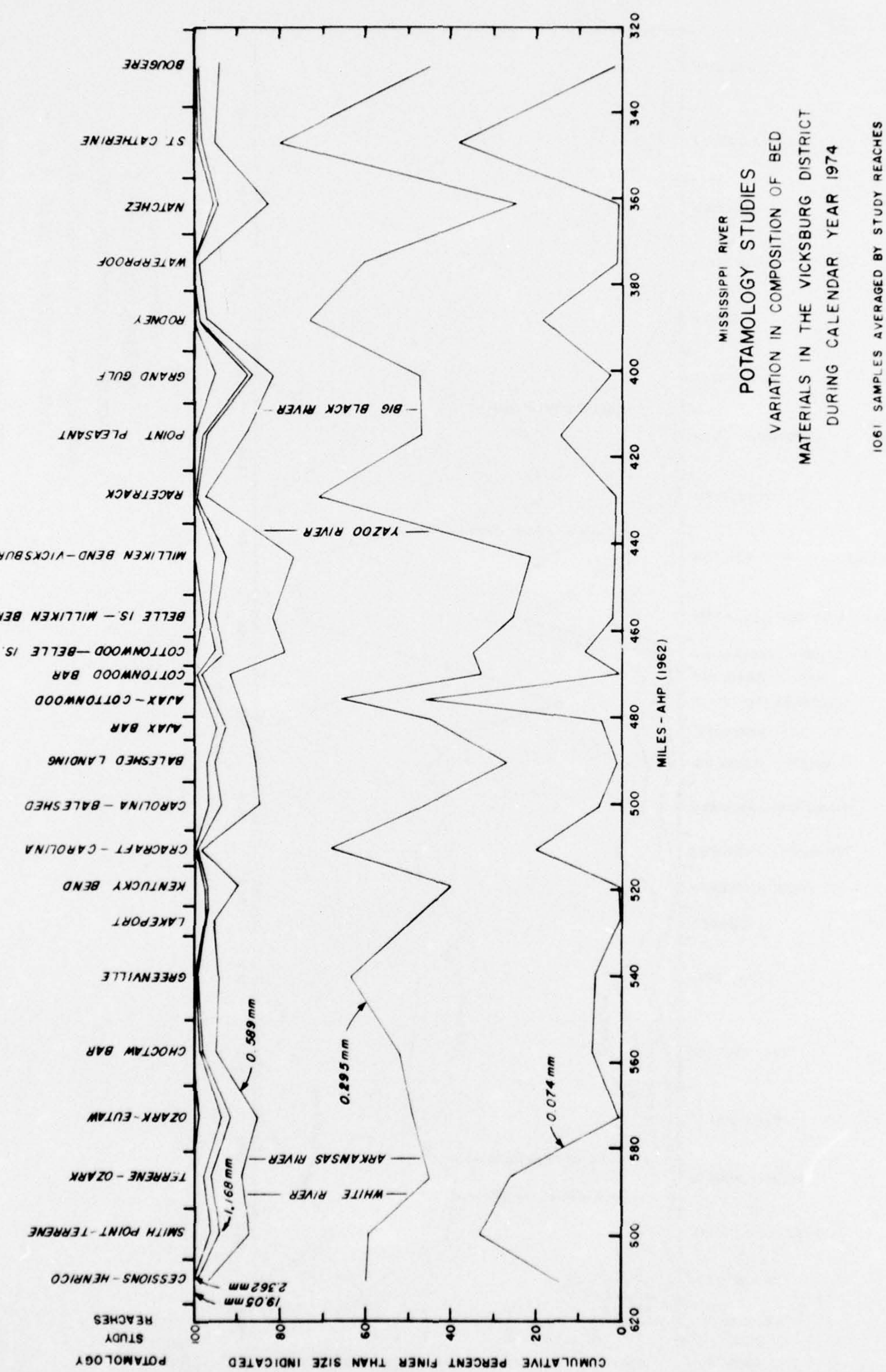
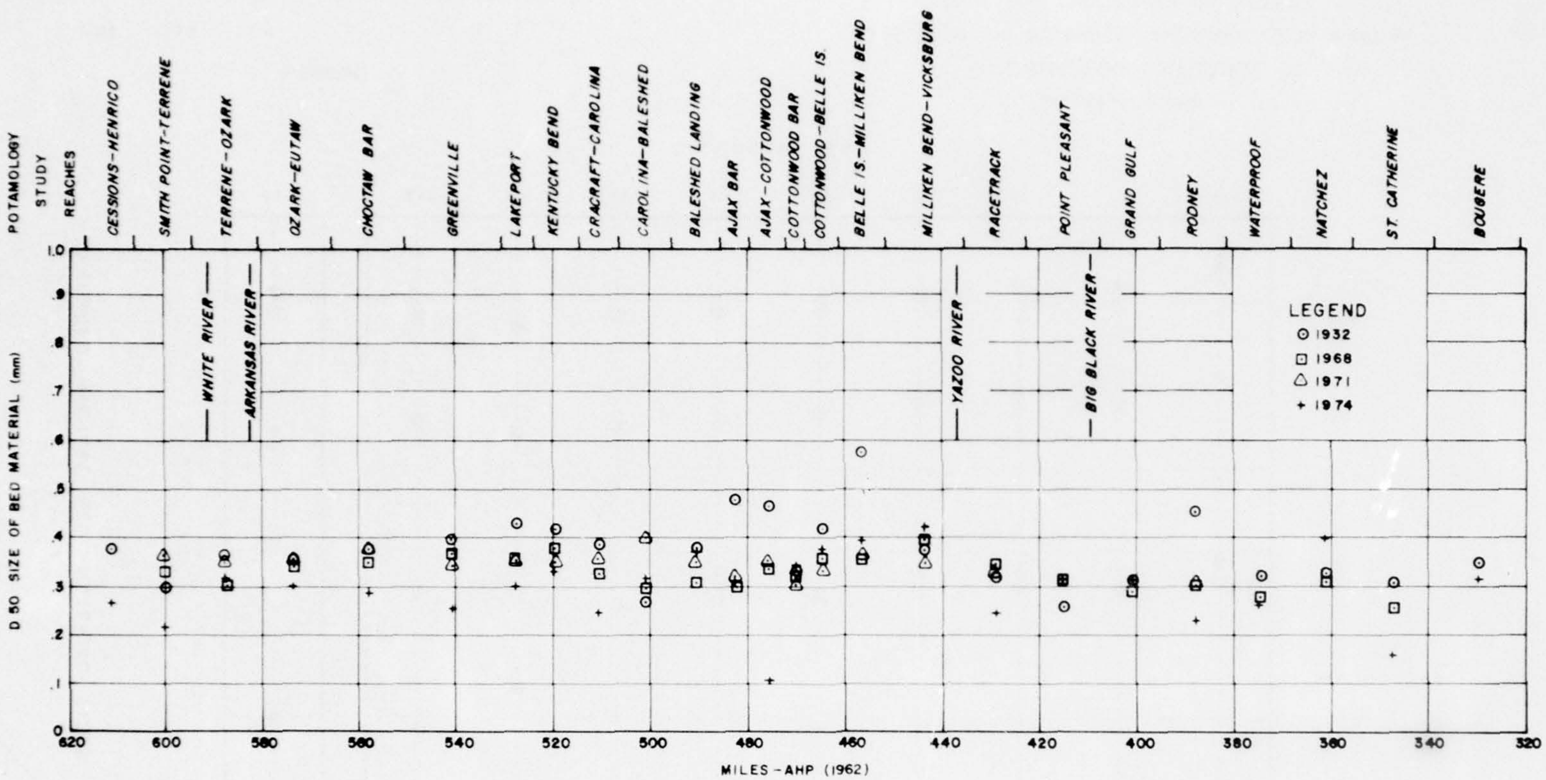

MISSISSIPPI RIVER
POTAMOLOGY STUDIES
VARIATION IN COMPOSITION OF BED
MATERIALS IN THE VICKSBURG DISTRICT
DURING CALENDAR YEAR 1974
1061 SAMPLES AVERAGED BY STUDY REACHES
MILES - AHP (1962)
CUMULATIVE PERCENT FINER THAN SIZE INDICATED
POTAMOLOGY STUDY REACHES
BOUGERE
ST. CATHERINE
NATCHEZ
WATERPROOF
RODNEY
GRAND GULF
POINT PLEASANT
RACETRACK
MILLIKEN BEND-VICKSBURG
BELLE IS. - MILLIKEN BEND
COTTONWOOD—BELLE IS.
COTTONWOOD BAR
AJAX-COTTONWOOD
AJAX BAR
BALESHED LANDING
CAROLINA - BALESHED
CRACRAFT - CAROLINA
KENTUCKY BEND
LAKEPORT
GREENVILLE
CHOCTAW BAR
OZARK-EUTAW
TERRENE - OZARK
SMITH POINT-TERRENE
CESSIONS-HENRICO
BIG BLACK RIVER
YAZOO RIVER
ARKANSAS RIVER
WHITE RIVER
0.074 mm
0.295 mm
0.589 mm
1.168 mm
2.362 mm
19.05 mm
320
340
360
380
400
420
440
460
480
500
520
540
560
580
600
620
0
20
40
60
80
100

FIGURE 54

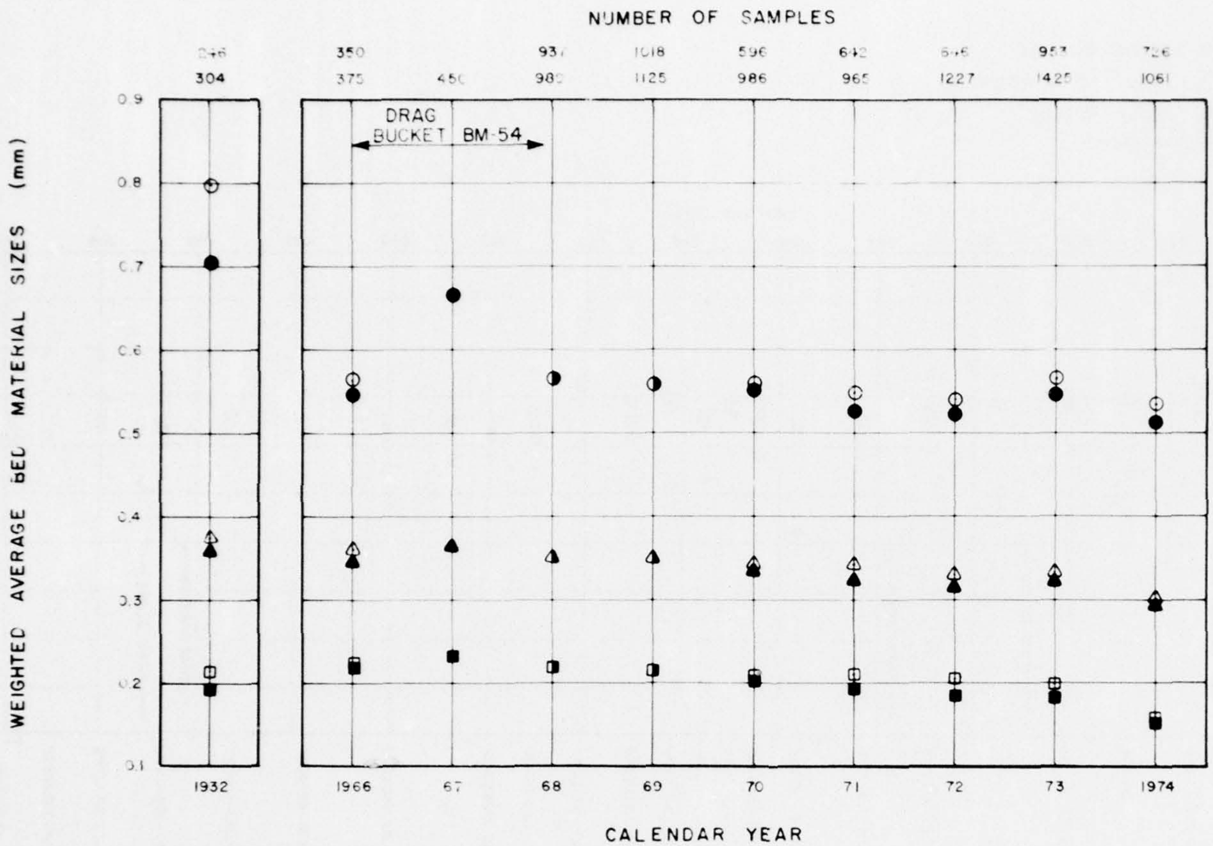


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN D_{50} SIZE OF BED MATERIALS FOR THE VICKSBURG DISTRICT

FIGURE 55



LEGEND

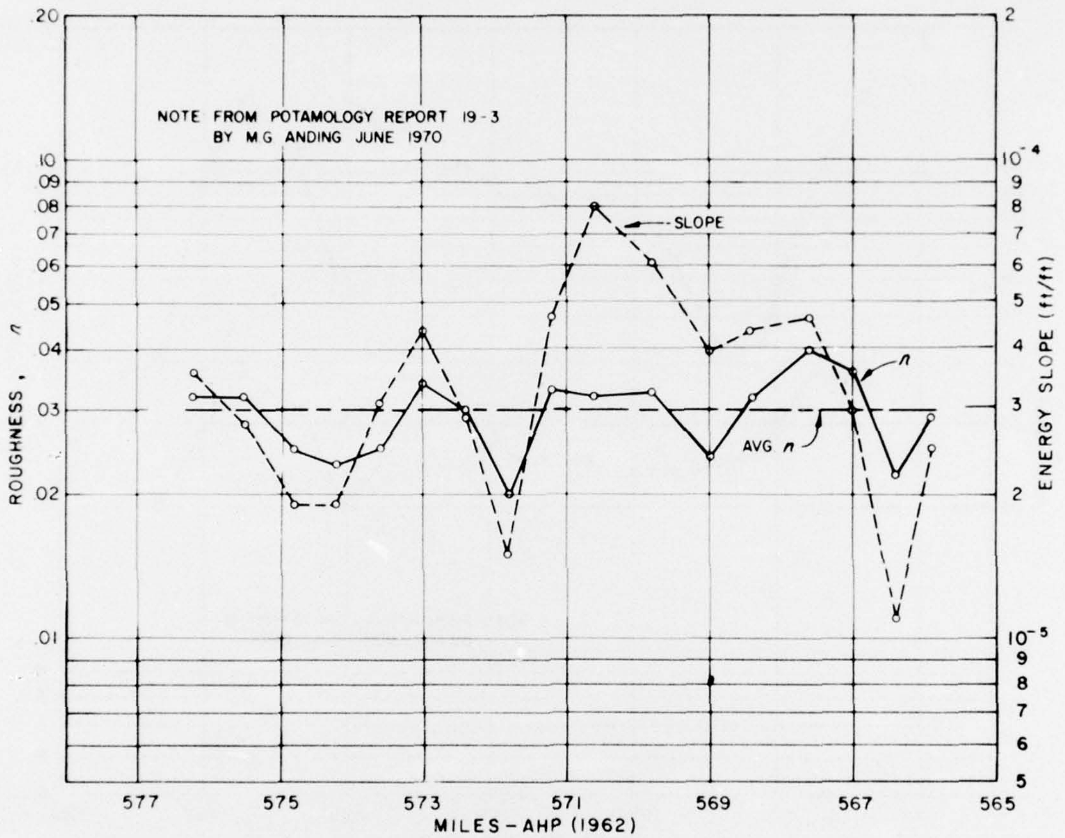
D84	D50	D16	
○	△	□	MILES 422.8-606.0 AHP
●	▲	■	ALL DATA AVAILABLE

MISSISSIPPI RIVER

POTAMOLOGY STUDIES

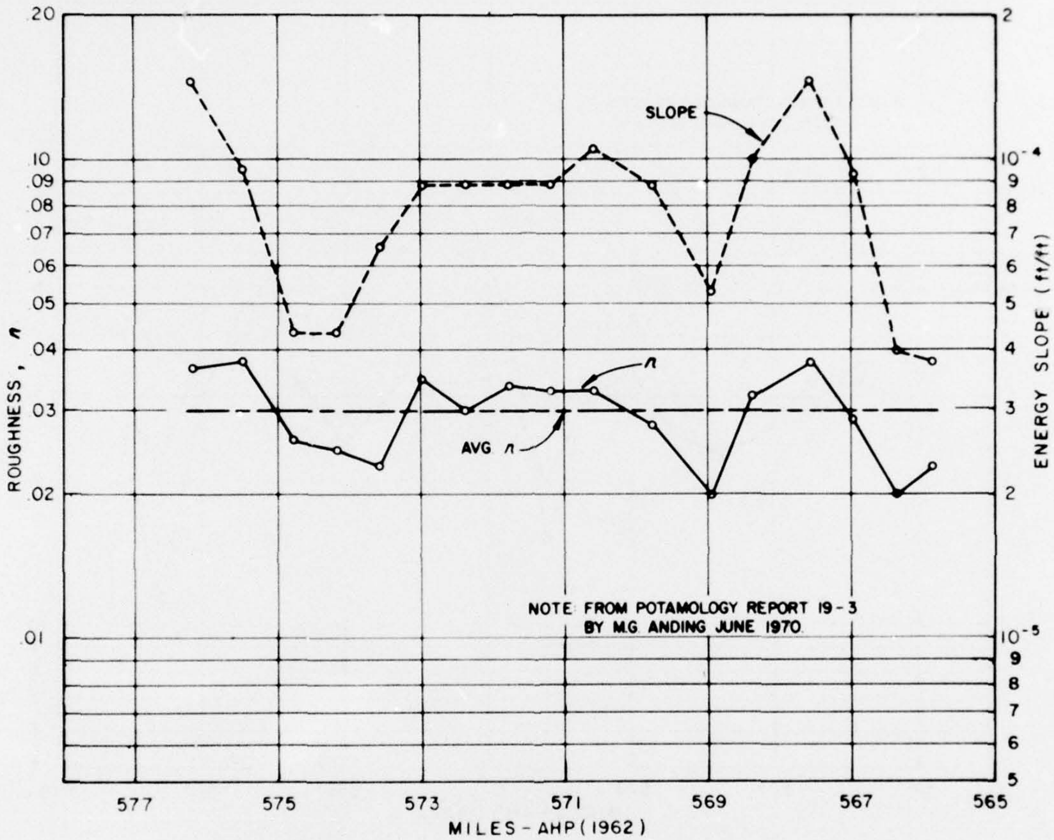
VARIATION IN WEIGHTED AVERAGE BED MATERIAL SIZES FOR THE VICKSBURG DISTRICT

FIGURE 56



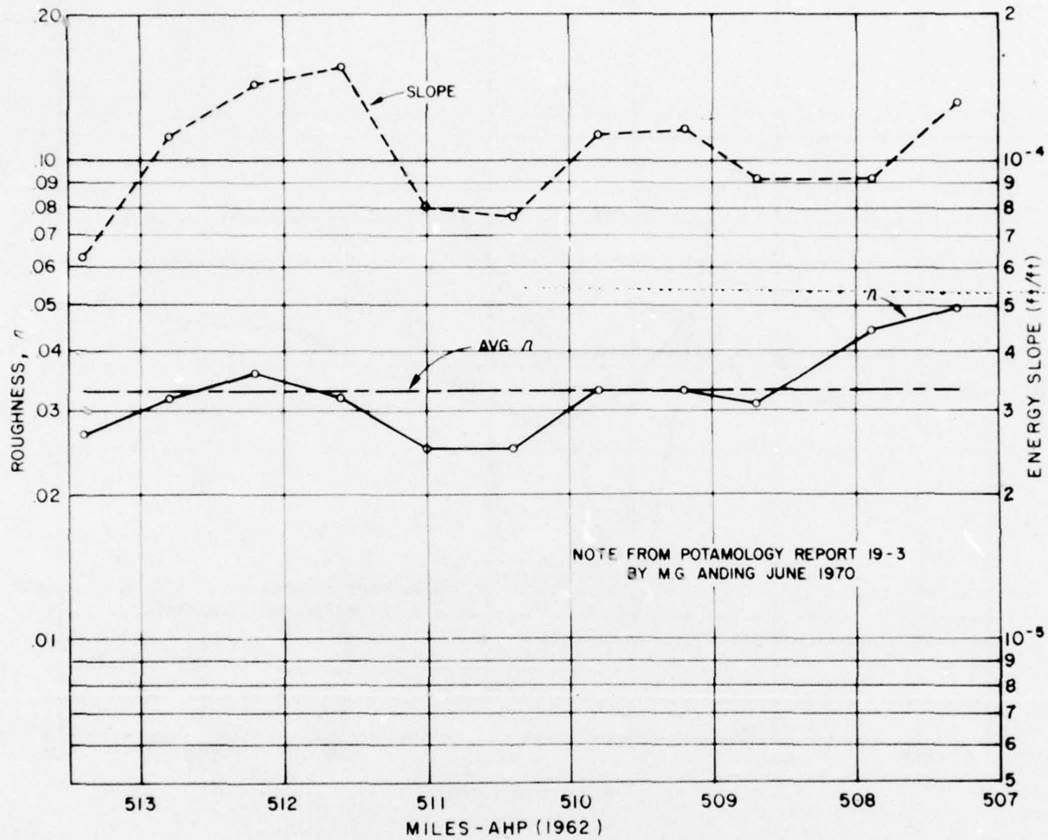
MISSISSIPPI RIVER
POTAMOLOGY STUDIES
VARIATION OF ROUGHNESS AND ENERGY SLOPE
WITH DISTANCE, OZARK-EUTAW REACH
(MEANDERING REACH)
FOR 25-27 OCT 66 ALWP STAGE 4 FT

FIGURE 57



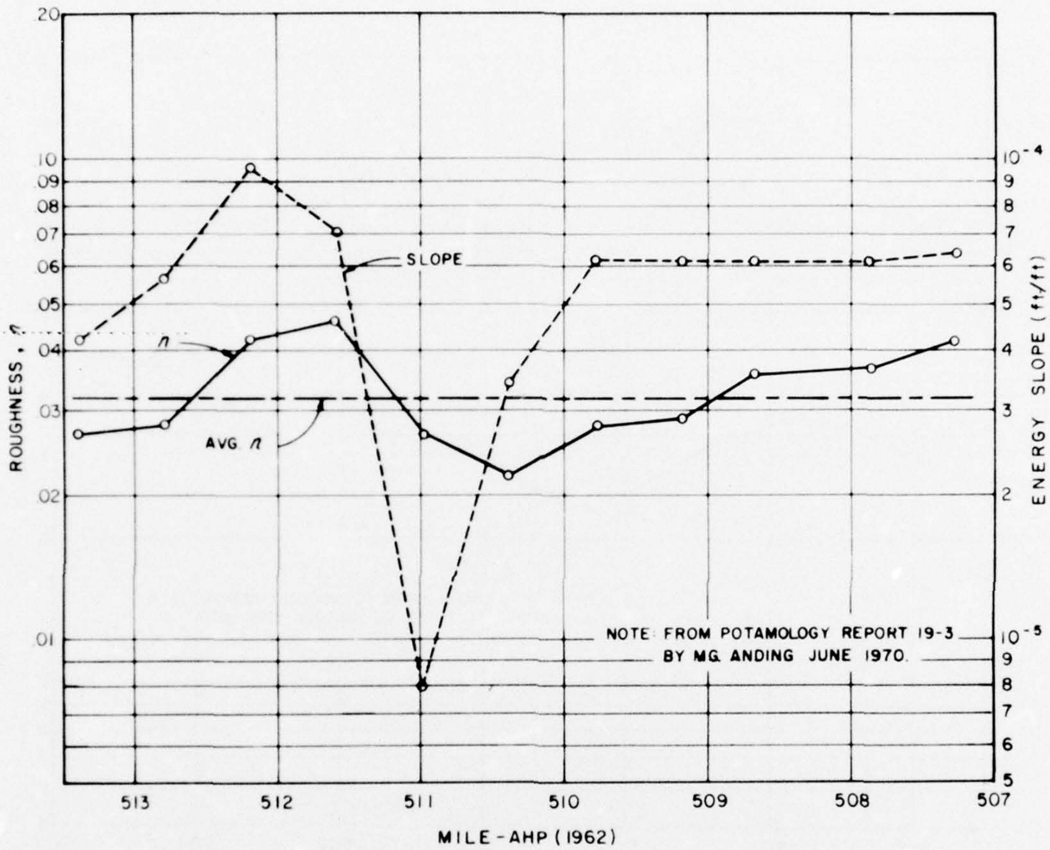
MISSISSIPPI RIVER
POTAMOLOGY STUDIES
VARIATION OF ROUGHNESS AND ENERGY SLOPE
WITH DISTANCE, OZARK-EUTAW REACH
(MEANDERING REACH)
FOR 1-5 JUNE 67 ALWP STAGE 30 FT.

FIGURE 58



MISSISSIPPI RIVER
POTAMOLOGY STUDIES
VARIATION OF ROUGHNESS AND ENERGY SLOPE
WITH DISTANCE, CRACRAFT-CAROLINA REACH
(STRAIGHT REACH)
FOR 18-19 OCT 66 ALWP STAGE 2 FT

FIGURE 59

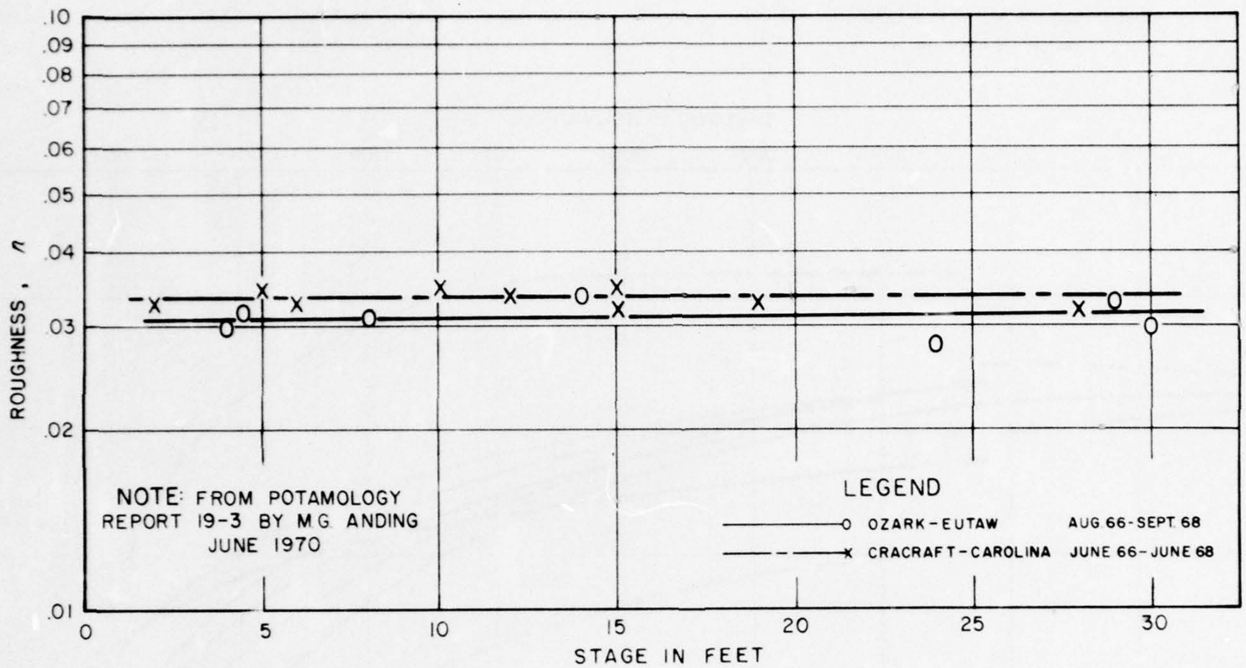


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION OF ROUGHNESS AND ENERGY SLOPE
WITH DISTANCE, CRACRAFT-CAROLINA REACH
(STRAIGHT REACH)
FOR 23-26 APR. 68 ALWP STAGE 28 FT.

FIGURE 60



MISSISSIPPI RIVER

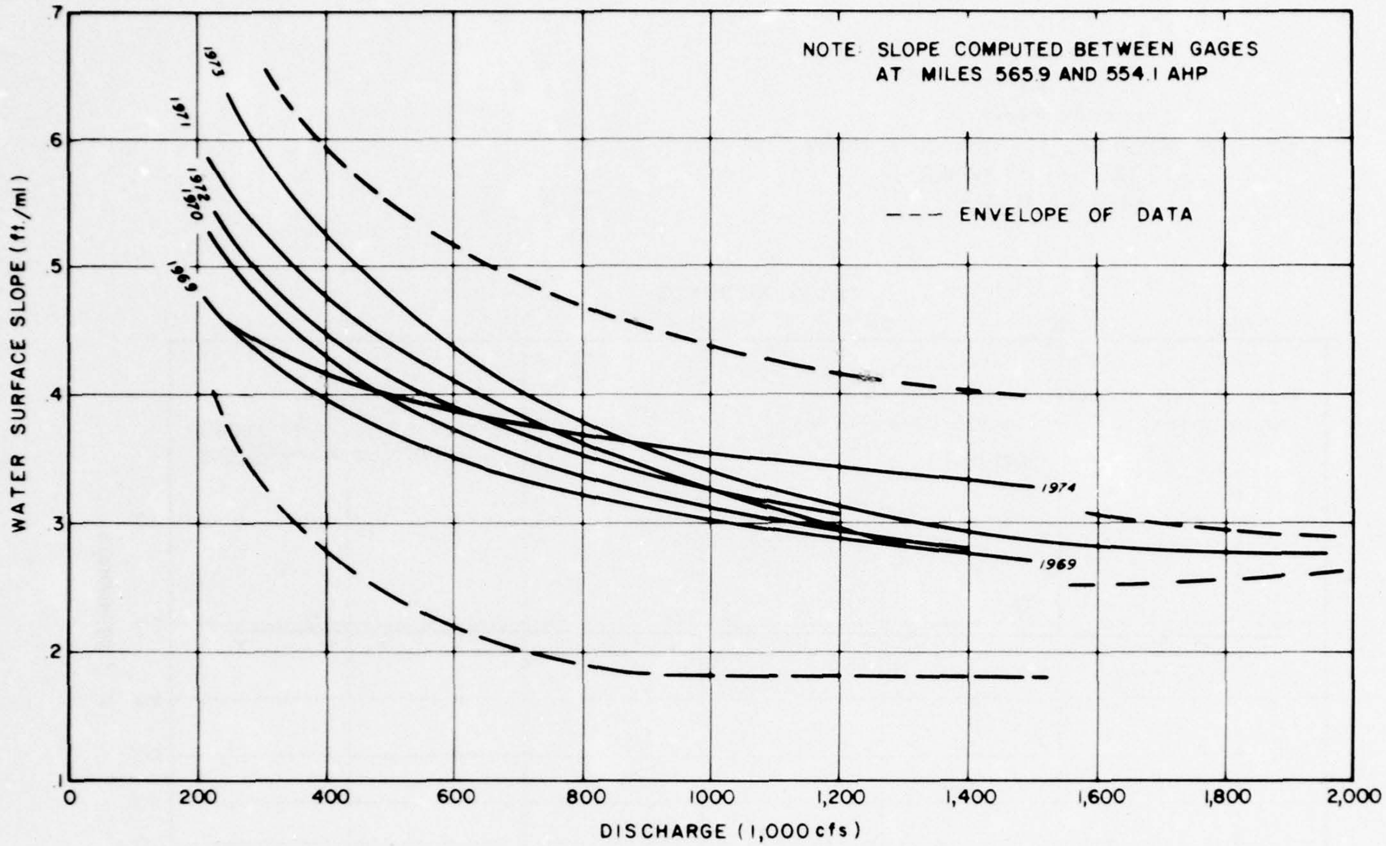
POTAMOLOGY STUDIES

VARIATION OF AVERAGE ROUGHNESS WITH STAGE

VICKSBURG DISTRICT

1966-1968

FIGURE 61

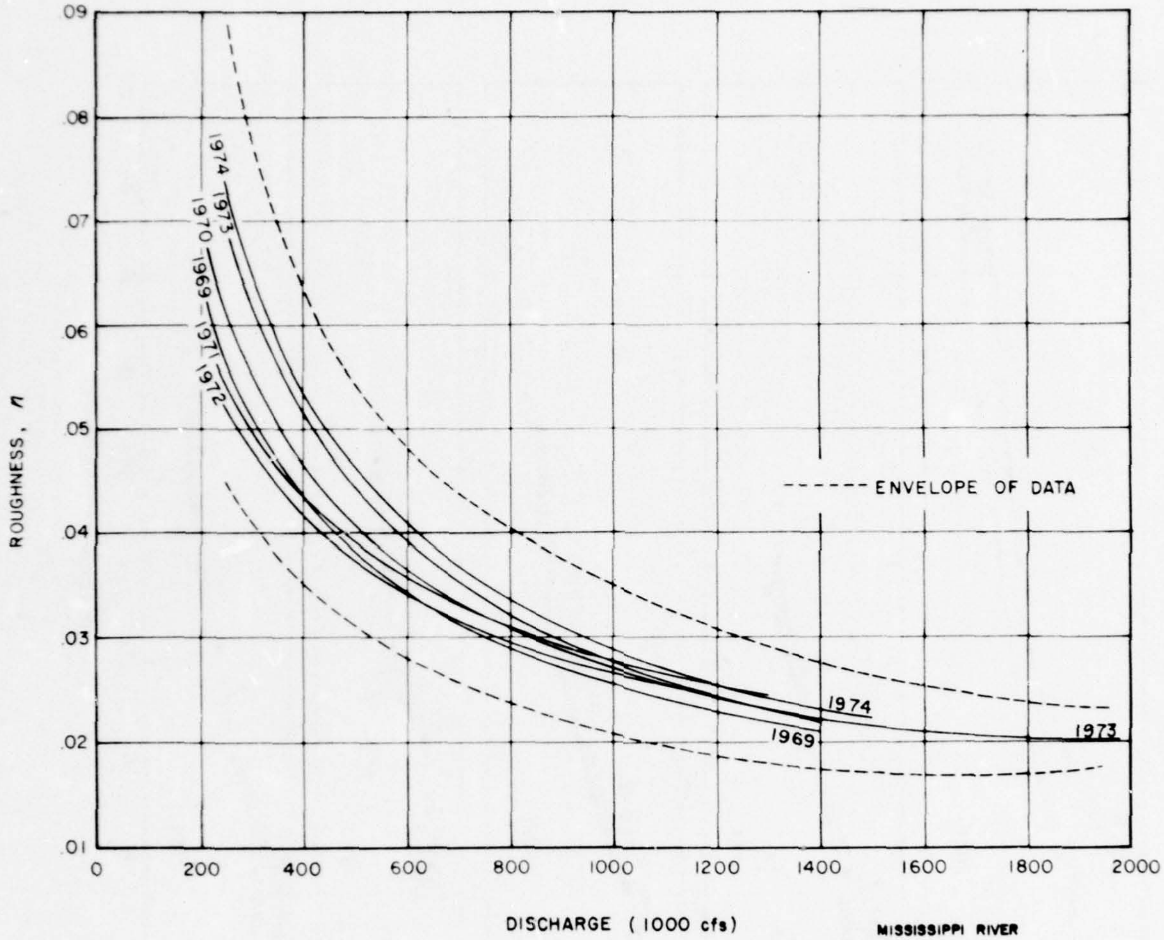


MISSISSIPPI RIVER

POTAMOLOGY STUDIES

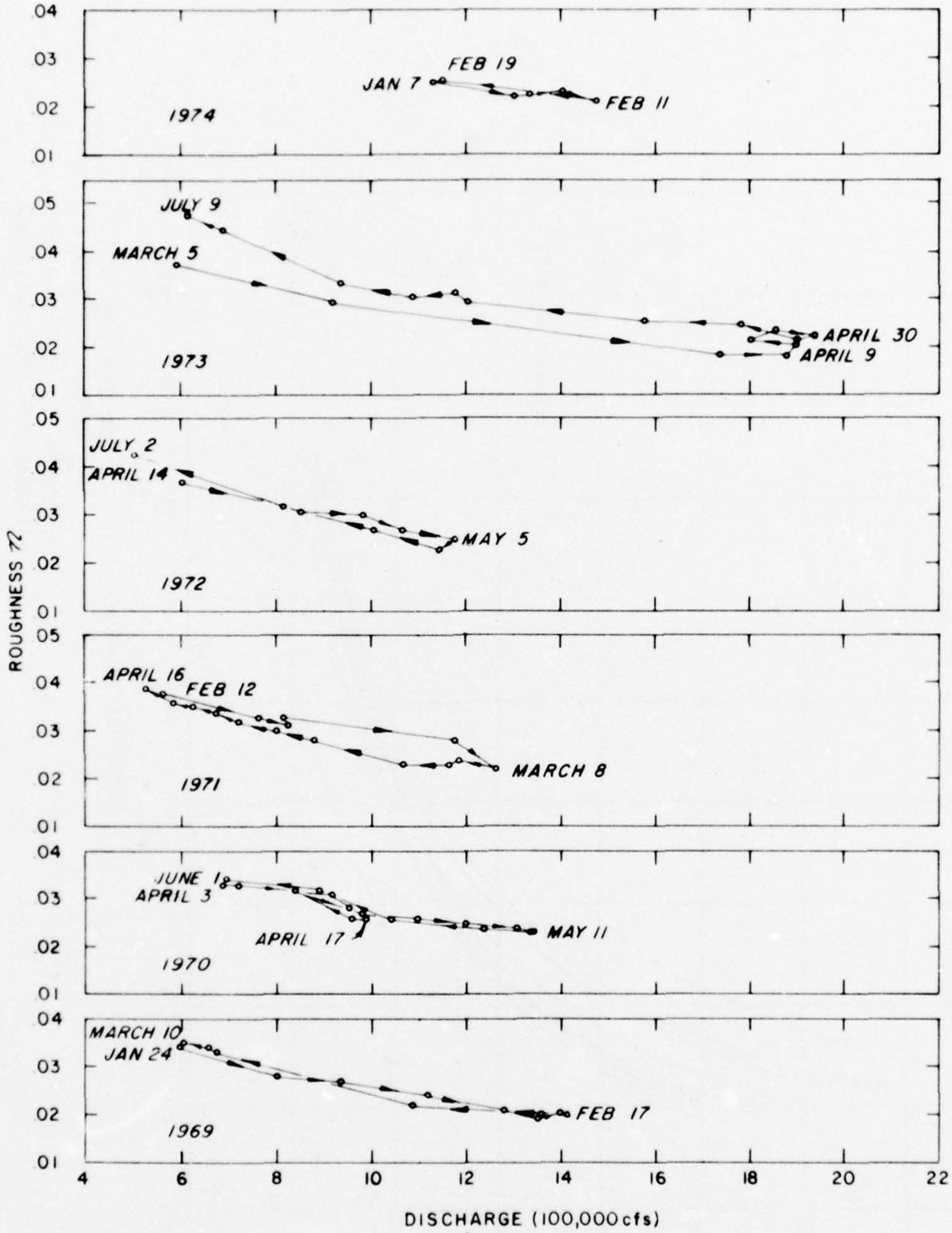
WATER SURFACE SLOPE VS. DISCHARGE
ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 AHP
WATER YEARS 1969 — 1974

FIGURE 62



MISSISSIPPI RIVER
POTAMOLOGY STUDIES
ROUGHNESS VS. DISCHARGE
ARKANSAS CITY DISCHARGE RANGE
MILE 565.9 AHP
WATER YEARS 1969–1974

FIGURE 63



MISSISSIPPI RIVER

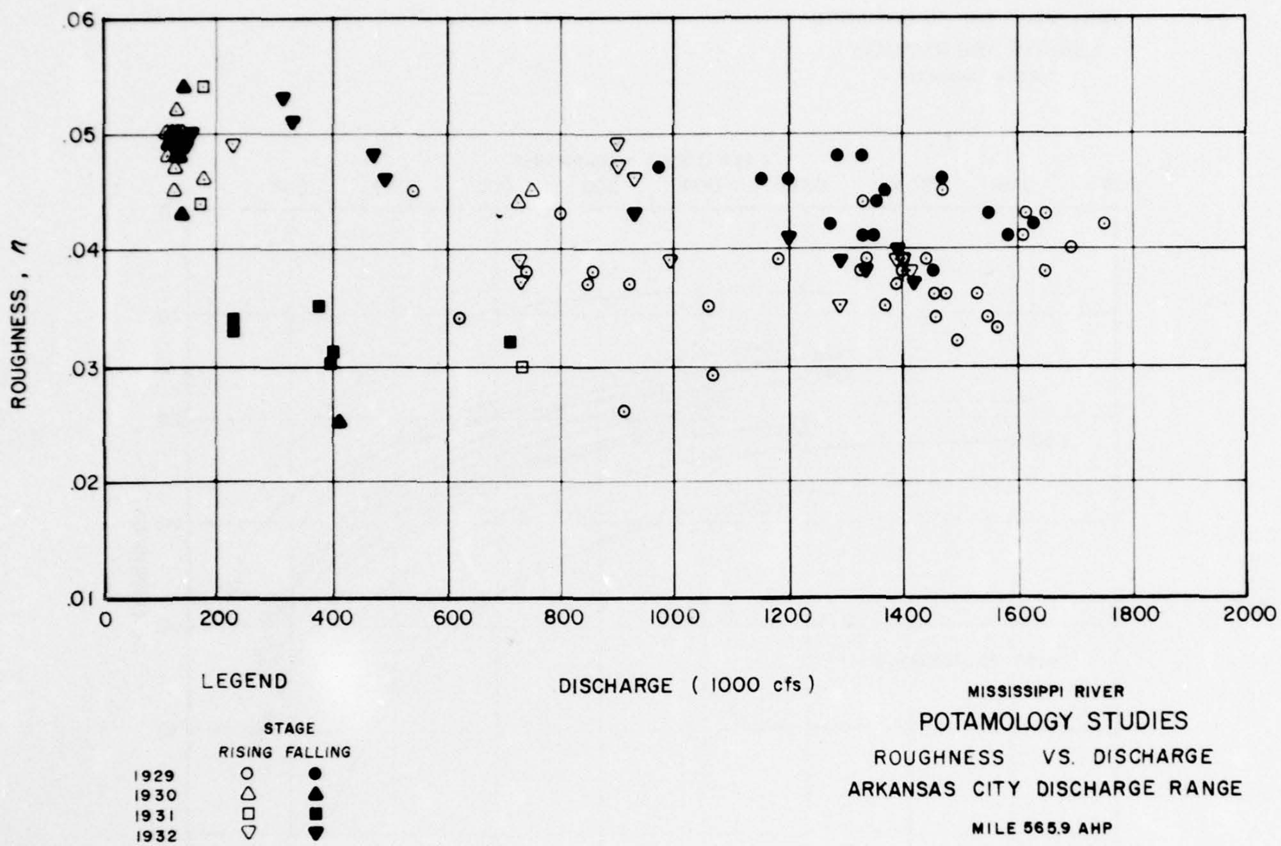
POTAMOLOGY STUDIES

VARIATION OF ROUGHNESS WITH DISCHARGE DURING MAJOR RISES (1969-74)

ARKANSAS CITY DISCHARGE RANGE

MILE 565.9 AHP

FIGURE 64



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

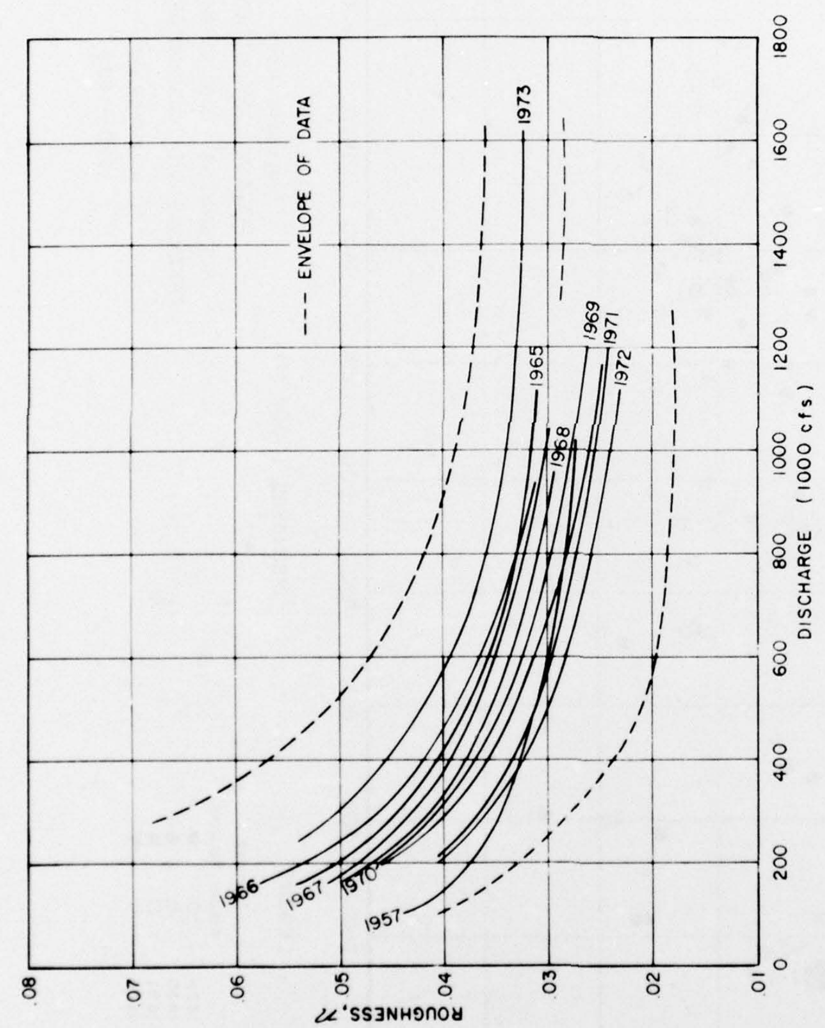
ROUGHNESS VS. DISCHARGE

ARKANSAS CITY DISCHARGE RANGE

MILE 565.9 AHP

1929—1932

FIGURE 65



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

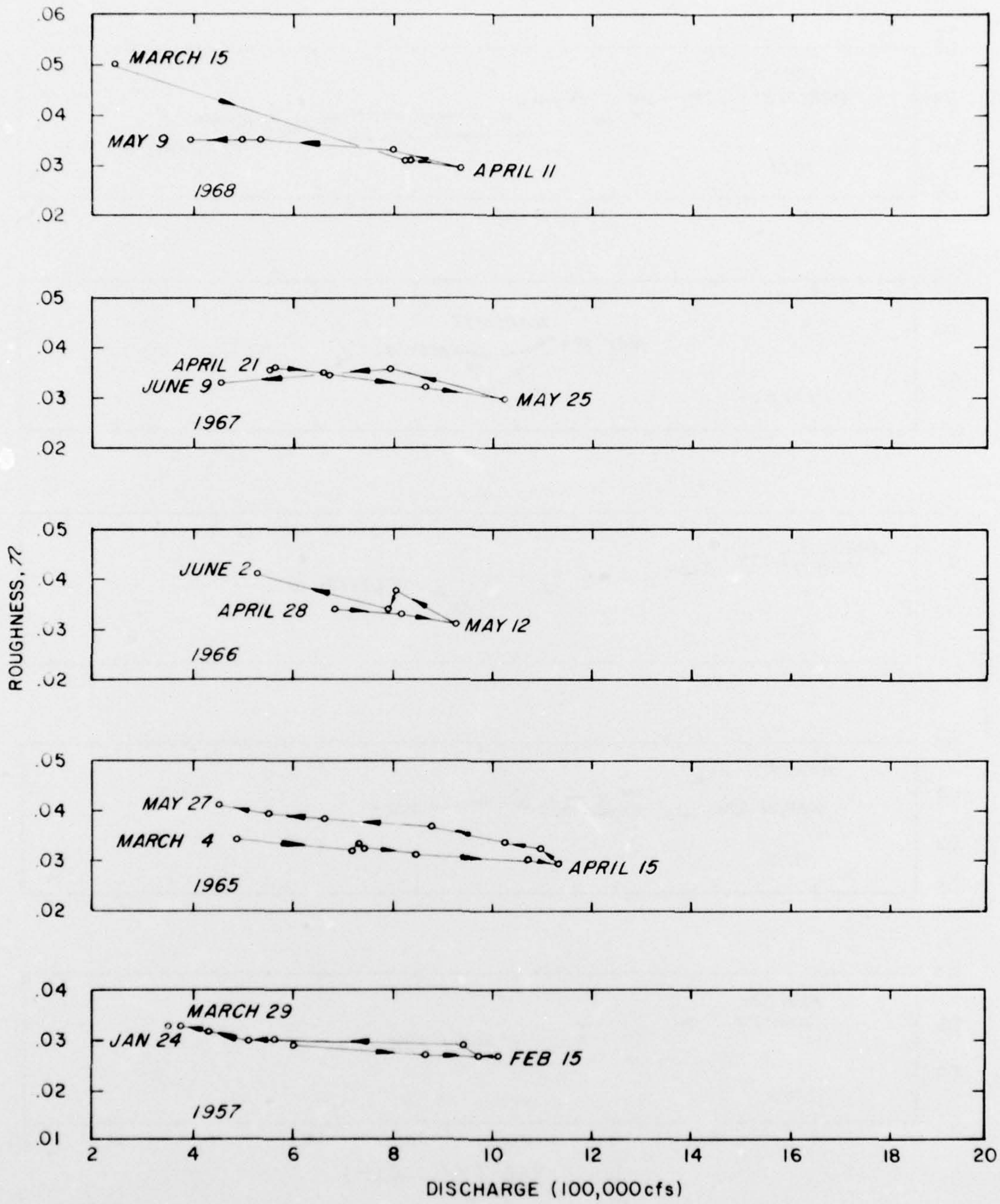
ROUGHNESS VS DISCHARGE

HELENA DISCHARGE RANGE

MILE 662.7 AHP

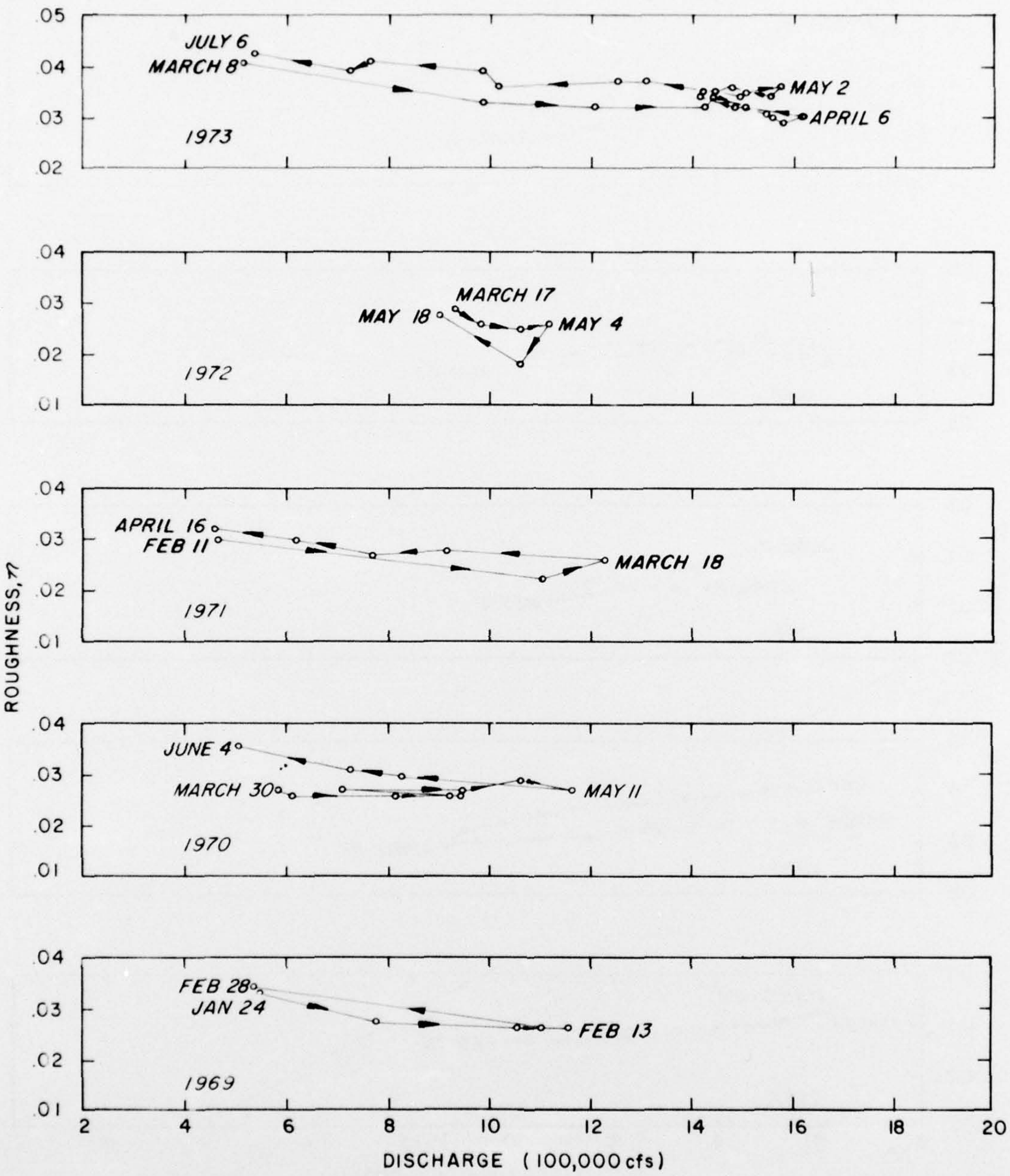
WATER YEARS 1957, 1965-1973

FIGURE 66



MISSISSIPPI RIVER
POTAMOLOGY STUDIES
VARIATION OF ROUGHNESS WITH
DISCHARGE DURING MAJOR RISES (1957, 1965-68)
HELENA DISCHARGE RANGE
MILE 662.7 AHP

FIGURE 67



MISSISSIPPI RIVER

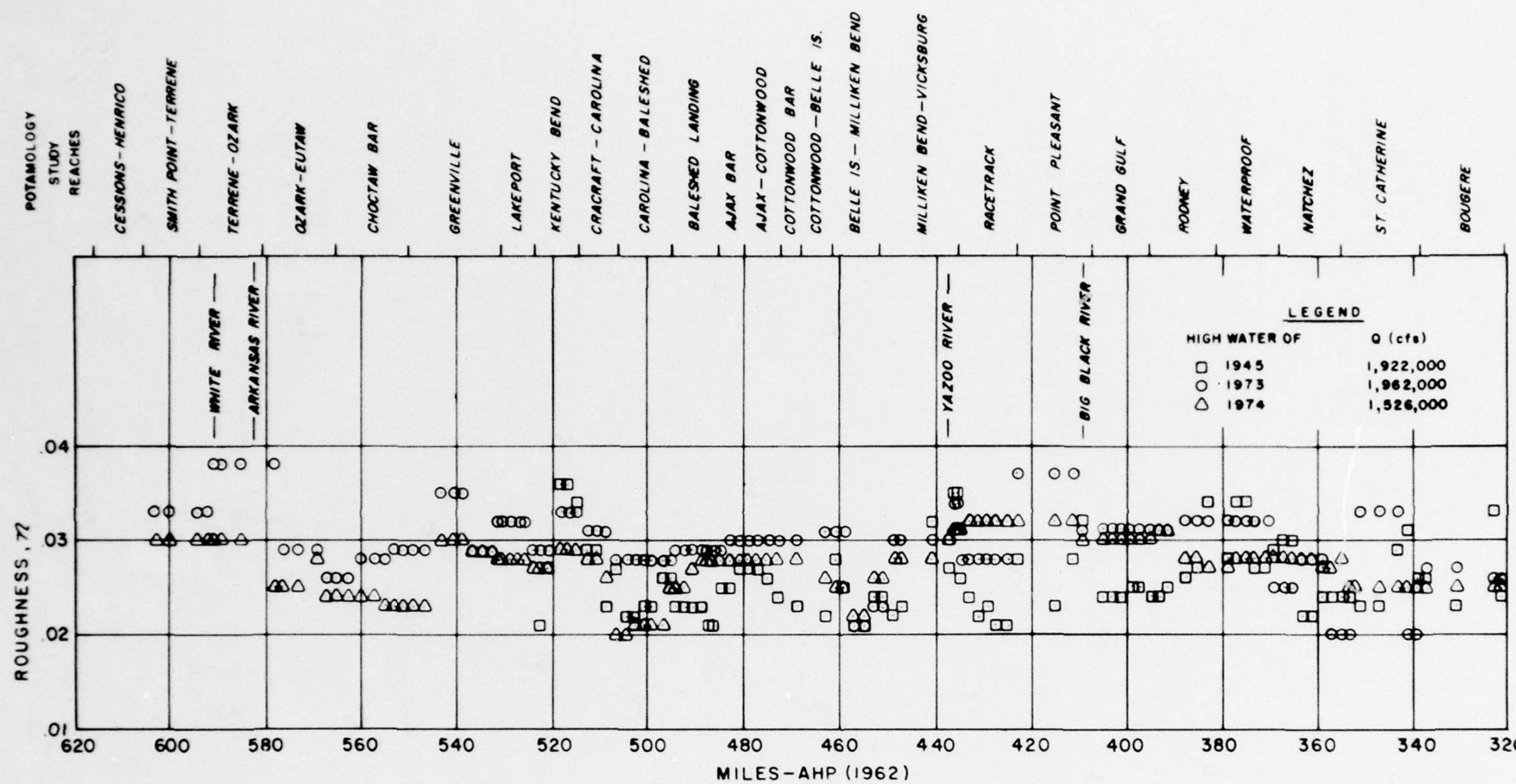
POTAMOLOGY STUDIES

VARIATION OF ROUGHNESS WITH DISCHARGE DURING MAJOR RISES (1969-73)

HELENA DISCHARGE RANGE

MILE 662.7 AHP

FIGURE 68



MISSISSIPPI RIVER

POTAMOLOGY STUDIES

VARIATION IN ROUGHNESS FOR FLOOD DISCHARGES IN THE VICKSBURG DISTRICT

FIGURE 69

Appendix D: Photographs

Photo 1. Gravel cover at head of Cottonwood Bar, mile 470, 26 September 1975

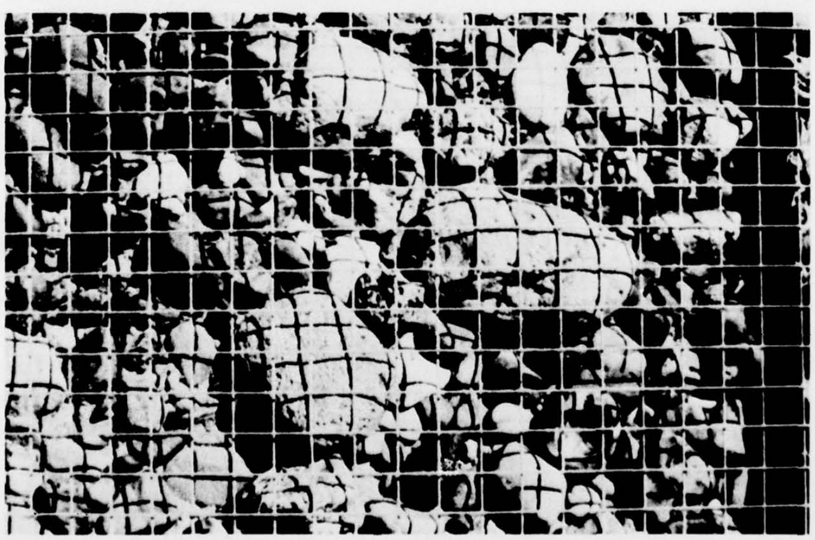


Photo 2. Cobbles on Cottonwood Bar, mile 470, 26 September 1975. Grid divisions are 2 cm

Photo 3. Togo Island Dike No. 2, mile 416, 23 September 1975

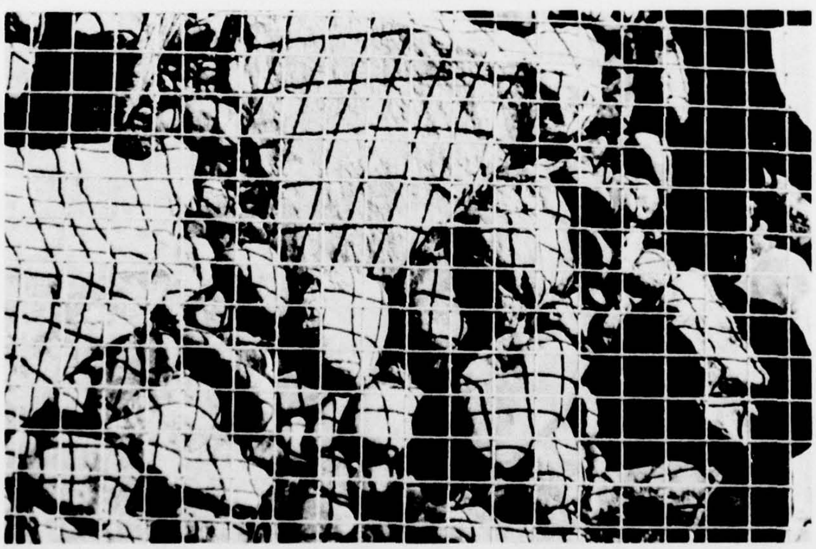


Photo 4. Gravel deposits on top of Togo Island Dike No. 2, mile 416, 23 September 1975. Large angular material is quarry-run dike stone. Grid divisions are 2 cm

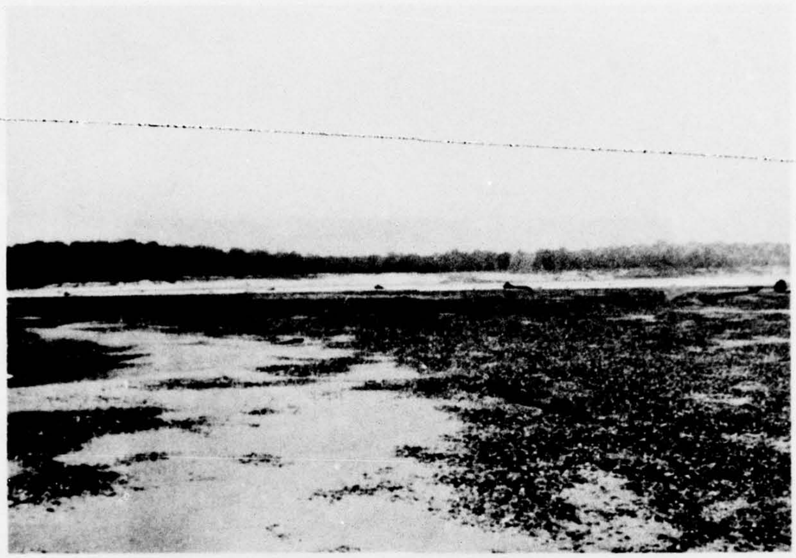


Photo 5. Gravel cover at head of Middle Ground Island, mile 409, 3 October 1973

Photo 6. Gravel cover at head of Middle Ground Island, mile 409, 7 August 1974, 6-in. rule for scale

Photo 7. Gravel cover at head of Middle Ground Island, mile 409, 7 August 1974. Trench cut to expose underlying sand. Six-in. rule for scale

Photo 8. Gravel cover at head of middle bar, mile 388.4, 22 September 1975

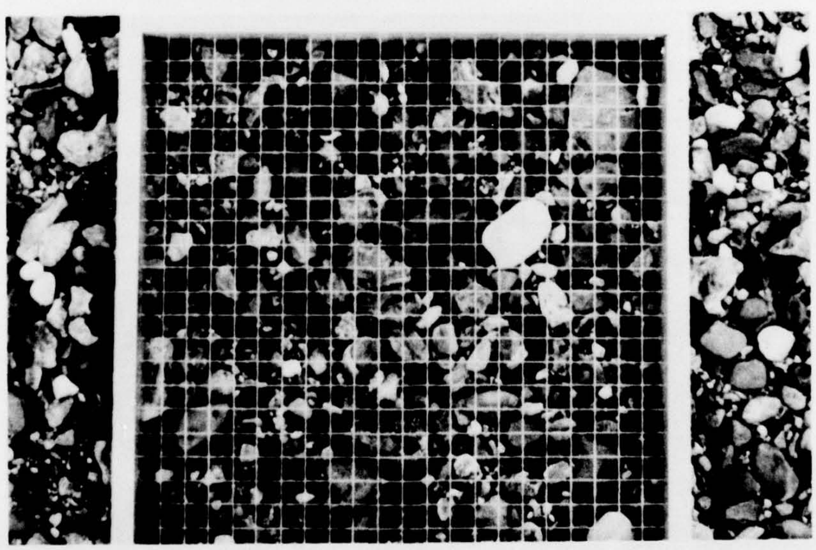


Photo 9. Gravel cover at head of middle bar, mile 388.4, 22 September 1975. Grid divisions are 2 cm

Photo 10. Sand waves on lower end of middle bar, mile 387, 22 September 1975. View upstream at left channel. Waves are 6 to 8 ft high

Photo 11. Sand waves on lower end of middle bar, mile 387, 22 September 1975. View upstream

Photo 12. Sand waves on lower end of middle bar, mile 387, 22 September 1975. View downstream at left channel. Waves are 8 to 10 ft high

Appendix E: Notation

C	Suspended sediment concentration, ppm by weight
C_s	Concentration of suspended sands, ppm by weight
C_T	Total suspended concentration, ppm by weight
$\overline{D}$	Average depth of flow, ft
D_{84}	Sediment size for which 84 percent is finer, mm
D_{50}	Sediment size for which 50 percent is finer, mm
D_{16}	Sediment size for which 16 percent is finer, mm
Q	Water discharge, cfs
Q_s	Suspended sediment discharge, tons/day
Q_{sf}	Suspended fines discharge (material <0.062 mm), tons/day
S	Slope of energy grade line
$\overline{V}$	Average velocity, fps
W	Width of flow, ft
a	Coefficient in the formula $W = aQ^b$
b	Exponent in the formula $W = aQ^b$
c	Coefficient in the formula $\overline{D} = cQ^f$
f	Exponent in the formula $\overline{D} = cQ^f$
j	Exponent in the formula $Q_s = pQ^j$
k	Coefficient in the formula $\overline{V} = kQ^m$
m	Exponent in the formula $\overline{V} = kQ^m$
n	Coefficient in the formula $C_s = nQ^z$
"n"	Channel roughness coefficient
p	Coefficient in the formula $Q_s = pQ^j$
r	Coefficient in the formula $C_T = rQ^y$
t	Coefficient in the formula $Q_{sf} = tQ^x$
x	Exponent in the formula $Q_{sf} = tQ^x$
y	Exponent in the formula $C_T = rQ^y$
z	Exponent in the formula $C_s = nQ^z$